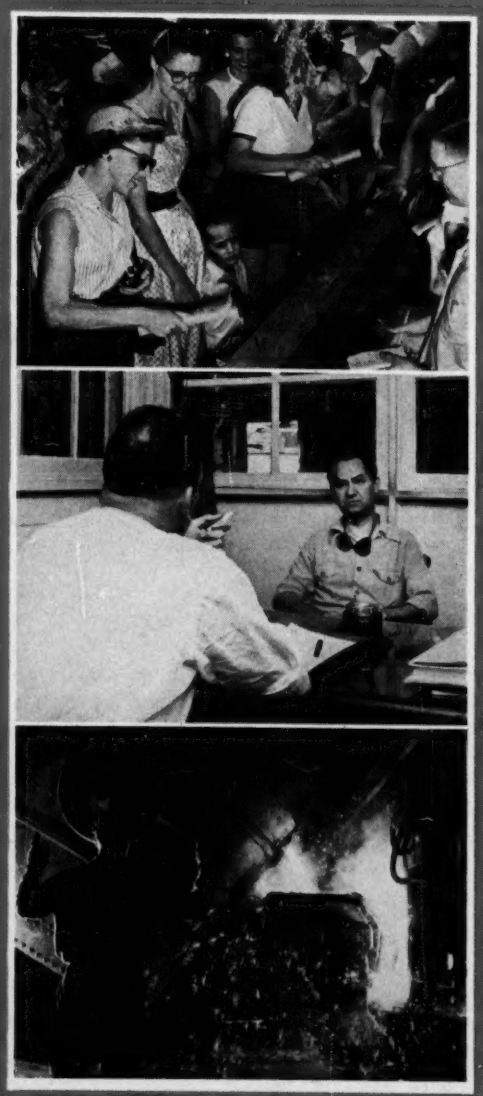
Chemical Week

July 25, 1953

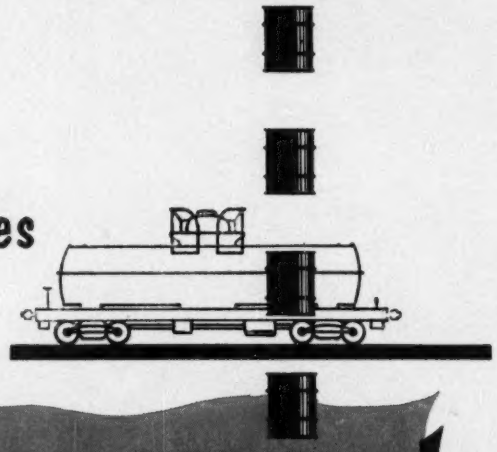
Price 35 cents



A McGRAW-HILL PUBLICATION

Another New Westvaco Commercial Product

For Production of Highly Potent Insecticides and Oil Additives



THIOPHOSPHORYL CHLORIDE

Now Available in tank cars and drums

This highly reactive intermediate may be used to produce a variety of esters, amides and anhydrides, containing sulfur and phosphorus.

Formula	$PSCl_3$
Properties	
Boiling Point	124-125°C
Specific Gravity, 25/4°C	1.630
Vapor Pressure, 25°C	22 mm
Flash Point	None

Write for Technical Bulletin S-18.

Working samples and technical data will be sent upon request. Our Technical Staff also stands ready to assist you with your particular application of this interesting Westvaco Chemical. Please submit requests on your letterhead to

MARKET DEVELOPMENT DIVISION

Westvaco® CHEMICALS TRADE MARK

WESTVACO CHEMICAL DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
GENERAL OFFICES • 161 EAST 42nd STREET, NEW YORK 17

ATLANTA, GA. • CHICAGO, ILL. • CINCINNATI, OHIO • CHARLOTTE, N. C.
DENVER, COLO. • HOUSTON, TEXAS • ST. LOUIS, MO. • LOS ANGELES, CALIF.
NEWARK, CALIF. • PHILADELPHIA, PA. • PITTSBURGH, PA. • VANCOUVER, WASH.

fmc TRADE MARK

Chemical Week

Volume 73 • July 25, 1953 • Number 4

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), founder. **Publication Office: 1309 Noble St., Philadelphia 23, Pa.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions to Chemical Week are solicited in the chemical and process industries from management men in administration, research, production and distribution. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscription Service, 1309 Noble St., Philadelphia 23, Pa., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Single copies 35¢. Subscription rates—United States and Possessions $5.00 a year; $8.00 for two years; $10.00 for three years. Canada $6.00 for a year; $10.00 for two years; $12.00 for three years. Other Western Hemisphere Countries $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $25.00 a year; $40.00 for two years; $50.00 for three years. Entered as second class matter December 20, 1951, at the Post Office at Philadelphia 23, Pa., under the act of March 3, 1879. Printed in U.S.A.

OPINION . . . . . .

A Lot Worse, A Little Cheaper

"There is always someone who can make something a little worse and sell it a little cheaper."—John Ruskin

If you like to mull over roseate predictions, you might like to take a look at what is predicted for the plastics industry. The Paley Commission Report, for instance, sees plastics output as soaring threefold in the next 25 years and even envisions the possibility that total consumption will hit a 1,000 lbs./year for every man, woman and child in the U.S. Even the more conservative estimates of the plastics outlook border on the fantastic. And we would be among the last to disparage this optimism because there is no gainsaying—in the light of our impending shortages of many vital, metallic raw materials; and considering the versatility of plastics—that their future is anything less than pleasantly promising.

Nonetheless, we cannot help but harbor the opinion that currently there are far too many plastic molders—and perhaps some purveyors of molding powders and films—who are taking a short-sighted let's-make-a-fast-dollar view of the business and thereby are impairing both the soundness and growth of an entire industry. By miserably misapplying plastics, by spewing out ill-designed consumer and industrial items, they are trampling public faith in plastics and inciting (and inviting) future sales resistance.

There is evidence that already the shameful activities of these unscrupulous entrepreneurs have wrought harm. The very word "plastics"—which in the past was not infrequently associated with "wonder"—is being sneered at in the public press. Just recently, for example, the *Chicago Tribune* had this to say, in rather earthy fashion:

"Plastics—Phooey.

"A major company announced the other day . . . that it has come up with a series of new plastics which will do all sorts of wonderful things. It is spending a million dollars on a new plant in this wonderworld of industrial chemistry.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

OPINION . . . . . .

"Wonderworld or not, we are agin it . . . We recognize, of course, that plastics have made profound and beneficial changes in our way of life . . .

"Offsetting all or most of that we have these substitutes for metal and wood that appear in scores of household articles, including toys. It used to be, when Johnny's tin fire engine got banged up, that you could take a pair of pliers and soldering iron and put it back on the street. When Suzy busted a leg off her dolly's dining table, you could glue it back on.

"Try and solder a plastic. Try and glue it. Try and weld it. Try and fasten it together with screws. Try and do anything except toss it in the ash can, and you will save time if you toss it there first.

"Our homes are flooded with scores of brittle, nonmalleable, nonfusible and nonfixable objects . . . They are all a pain in the neck and we hope that the tricksters who devise and perpetrate them will be done in . . ."

The *Tribune* sentiment, if it were merely an isolated example of spleen-venting, would not of itself warrant serious consideration. But it isn't; many another view in the same vein has been expressed in other parts of the country. The *Trib* opinion, we fear, is symptomatic.

Not long ago we made a spot check of toy stores, queried their proprietors and, particularly, listened to what their five- and ten-year old customers had to say. The consensus of the toy sellers is this: plastic toys are cheap, they look attractive. Some of them—the more expensive ones—are well-designed and rugged. Most of them are shoddy and the manufacturers tell us blandly that "as long as they hold together until the kids get home they're good enough."

Among the examples they cite of plastics misapplication: Toy cars with snap-on slots for axles almost devoid of any structural strength; all-plastic pistols that are shattered after a few dozen "clicks"; plastic bow-and-arrow sets with as much resilience as October corn husks.

What do their young customers think—those who will be the adult buyers a decade from now? "They amble in here and ask what it's made of—first; they want metal or wood—even the metal-coated plastics don't deceive them."

Perhaps this a question to ponder. How much will it cost to re-win favor of these future customers—to re-establish sales acceptance for plastics a few years from now?

But toys represent only one rather

small aspect of the problem. The nub of the issue is that most molding compositions and films are bought by the pound and sold—as useable articles—by volume. Anyone who wants to cut corners is tempted, therefore, to either load up his mix with filler, or to shade on the thickness of the component parts of the molded pieces.

A far-from-minor percentage of vinyl films on the market today are much too thin to be useable or durable; a disturbing quantity of garden hose is of disgraceful quality; a legion of molded knick-knacks are as fragile and brittle as old parchment.

The same sort of thing, although to a somewhat lesser extent, is going on in industrial articles. It is not uncommon to trim down the wall thickness of polyethylene pipes. The result: pipe rated at 100 psi. fails at 60-70 lbs.

We realize, of course, that most manufacturers of the basic resins and molding compositions are not responsible for many of these commercial sins. Many, indeed, have been actively striving to police and curb their customer-molders. A good deal more "policing" and curbing must be done, however, if we want to ensure a sound and respectable future for the industry.

"There is always someone who can make something a little worse and sell it a little cheaper." And those who do should be rooted out and exposed because it is they who are undoing much of the good that has been done.

W. Alec Jordan, *Editor.*

Synthetics Win?

TO THE EDITOR: . . . As I recall you had quite a tussle with the organic farmers some few months ago . . . and a lot of them wrote to accuse you of many evil doings . . .

They cited all sorts of "facts" to prove to their own humus-laden satisfaction that any and all chemicals are damaging to plant life, human life, animal life . . . rodents and rabbits . . .

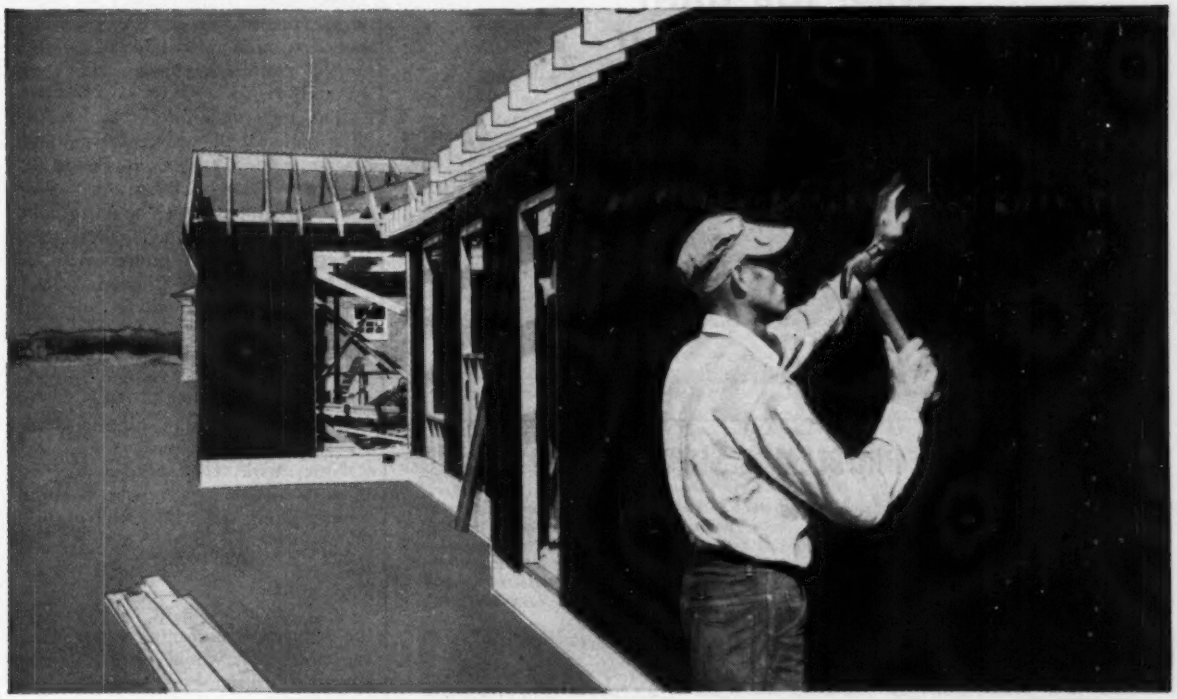
One of their top disciples . . . and one of the most often referred to experiments and "accomplishments" . . . was Malabar Farm . . . and the views of novelist Louis Bromfield. He, too, if I remember correctly, gave the Delaney Committee some well-packaged opinions on chemicals . . .

Just the other day I happened to pick up a package of a new fertilizer—called Fertileze . . . which contains "14 elements" for plant growth. It's "for foliage and root feeding of everything that grows" . . . I'll give you

DOW

DOWICIDE PRESERVATIVES ADD LIFE TO INSULATING BOARD

Manufacturers of cellulosic materials control rot and termite damage using DOW industrial preservatives



The Dow Chemical Company
Department DP-27
Midland, Michigan

Please send me detailed information on DOWICIDE PRESERVATIVES.

Name_____

Title_____

Company_____

Address_____

City_____ State_____

Manufacturers of well-known brands of exterior sheathing board are getting positive, long-lasting mold, bacteria and termite control using a DOWICIDE® PRESERVATIVE. The positive protective action of the DOWICIDES gives much longer life to this popular building and insulating material. They keep it free from rot and mold under the most extreme moisture and temperature variations.

There are *fourteen* DOWICIDE PRESERVATIVES, each designed for a specific mold and bacteria problem. They are being used extensively in the textile, leather, latex paint, paper and many other industries.

Whether you are developing a new product or changing an old one, DOWICIDE PRESERVATIVES may contribute to its manufacturing and sales success.

Call upon Dow for a solution to your mold and bacteria problems. Write today for detailed information about DOWICIDE PRESERVATIVES. THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on DOW CHEMICALS

DOW

a hundred to one that it does contain plenty of these "malevolent" synthetic chemicals . . . and I can't detect a trace of humus . . .

Curiously it is endorsed by Author Bromfield . . . and says so right on the label . . .

Humus-mongers arise !!!

J. R. MILLER
Chicago, Ill.

Fluorine Safeguard

TO THE EDITORS . . . You have published letters from readers in regard to the fluoridation of drinking water, but the most important single item in the picture has been wholly neglected.

The tacit assumption . . . is that fluoridation shall occur at the pumping station, which necessarily means under supervision of the water department superintendent. The unfortunate part: practically every water works superintendent is impressed with the idea that, if a little is good, a lot is better! (And if you don't believe it, go to Washington, D.C., or the upstate New York cities where chlorination is required by law and consider the outrageous excess of chlorine that is inflicted on the long-suffering drinkers of that witches' brew.)

New York City, fortunately, is blessed with a superintendent somewhere along the line who knows about optimum values and accordingly . . . New York water doesn't taste much.

. . . Fluoridation at the hands of the ordinary run-of-mine water works superintendent would yield a serious hazard of fluorine poisoning—a risk out of all reason to the possible advantages.

It seems to me that, if fluoridation is to be practiced, it should be restricted by law to those places where a graduate chemist is employed with adequate testing equipment for hourly tests for the fluorine content . . .

HARRIS D. HINELINE
Mount Vernon, N.Y.

DATES AHEAD..

The Electrochemical Society, Ocean Terrace hotel, Wrightsville Beach, N.C., Sept. 13-16.

American Standards Assn., 35th annual meeting, Waldorf-Astoria hotel, New York, N.Y., Oct. 19-21.

National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill., Oct. 19-23.

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

July 25 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1953

Inedible Fats, Oils, Yield New Vinyl Plasticizers

New plasticizers for vinyl plastics are now being made from inedible animal fats and vegetable oils, according to a recent announcement. The process was developed in the course of research by a Government agency to find new uses for surplus animal fats.

The process involves treatment of the acid portion of fats and oils with hydrogen peroxide in such a way that a specially oxidized oil results. The method is simple, cheap and practical, and can be used with a wide variety of materials, it is said.

A big advantage claimed for the new plasticizers is that they protect plastics containing chlorine from the discoloration and weakening caused by formation of hydrochloric acid when the plastic is exposed to heat or sunlight.

Methionine Alleviates Infant Diaper Rash

Recent clinical data released by a leading pediatrician has shown that DL-methionine can cure certain types of diaper rash. It was found that this condition could be traced to the presence of free ammonia in the urine, which is the result of a metabolic upset in nitrogen equilibrium. When DL-methionine was added to the infants' formulas, it was found to restore the proper nitrogen balance and make the rash disappear within 7 to 10 days. This use of methionine should lead to practical applications by practitioners confronted with stubborn cases of diaper rash or napkin dermatitis.

Booklet Covers Selection, Use of Paint Strippers

A new, 13-page booklet of instructions on paint stripping has been published describing procedures for stripping "practically any finish" from all metals and woods. The booklet gives valuable hints on paint stripping generally, and includes a reference chart to simplify selection of the right stripper for the job. The stripping of paints from vertical and overhead surfaces of all kinds are covered.

Soil Conditioners Rated

Results of tests conducted by an independent agricultural research service to rate the effectiveness of 16 commercial soil conditioners are now available, it has been announced. The conditioners were tested for their performance in stabilizing soil aggregation in plots of silty, clay loam. Soil samples were examined before and after application over a period from July to December of last year. The report identifies the most effective synthetic conditioners as shown by these tests.

U.S.D.A. Scientists See Their Research Translated Into First Full-Scale Allethrin Plant

U.S.I. Honors Scientists Credited with First Successful Synthesis of Allethrin; Public Inspection of Plant Held for Representatives of Government and Industry

Three of the scientists who first successfully synthesized allethrin in the laboratory were recent guests of U.S.I. to see how their research has been translated into the nation's first full-scale plant for commercial production of this important insecticidal chemical.

The scientists are Drs. Milton S. Schechter, Frederick B. LaForge, and Nathan Green, chemists of the U. S. Department of Agriculture who announced in March 1949 that they had synthesized a "pyrethrin-like" chemical in their laboratory. As early as May 1949, U.S.I. had adapted this complex synthesis—which involves 18 separate processes—to production of substantial quantities in the laboratory. U.S.I. technologists evaluated the chemical, now designated as allethrin, in exhaustive tests and became convinced that it had a valuable place in insecticide formulations, although it was not the "synthetic pyrethrum" that some had thought when it first appeared.

Production Now at Full Rated Capacity

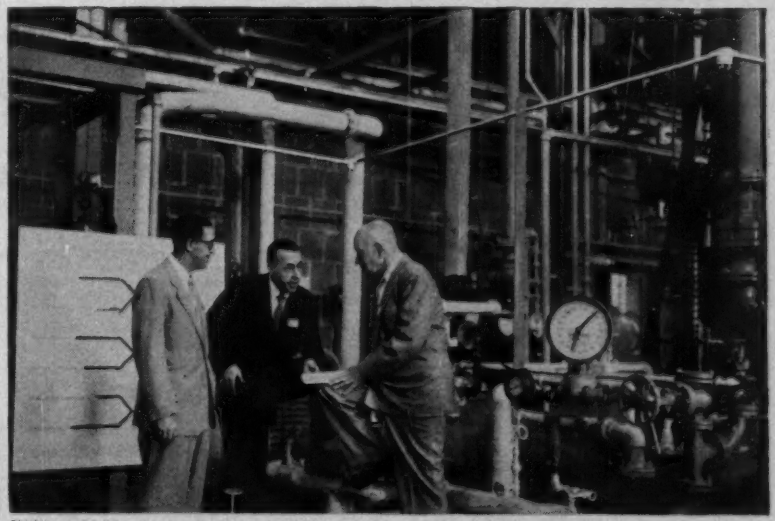
The next step in allethrin's progress was a long program of further chemical and entomological research, and finally the engineering and construction of a fully integrated plant devoted exclusively to the production of allethrin. Since its opening last October, production of this new plant has increased each month to its full rated capacity. The men whose long research touched off this important addition to industrial chemistry were

MORE

Use Radioactive Dirt In Dishwashing Tests

Dirt and bacteria, made radioactive with phosphorus-32, are being used in current research to test the efficiency of cleansers in making eating utensils clean and safe. The research is part of a non-commercial organization's program to develop a scientifically accurate yardstick for measuring dirt and bacterial removal from eating surfaces.

Studies so far have shown that different surfaces vary widely in their retention, with glass, china and stainless steel being the easiest surfaces to clean. In one series of tests, washing removed from 97 to 99 per cent of the bacteria from hard surfaces. It was found by use of a Geiger counter and exposure to x-ray film that identical washings removed as little as 56 per cent from less hard surfaces.



William P. Marsh, Jr., (center), President of U.S.I., is shown discussing details of the complex allethrin manufacturing process with Dr. Milton S. Schechter (left) and Dr. F. B. LaForge (right), two of the three U. S. Department of Agriculture scientists who were the first to separate and identify the four active principles of pyrethrum and to synthesize one of them, allethrin, in the laboratory.

CONTINUED

Allethrin Plant

guests of honor June 3rd at U.S.I.'s formal public introduction of the plant in Baltimore.

Valuable Adjunct to Pyrethrins

Allethrin is a close but not exact duplication of one of the constituents of pyrethrum—the oldest and one of the safest insecticides known. Its action on many species of insects, however, is quite different from that of the natural product, depending upon such factors as method of application, synergist used and others. It is an effective insecticide in itself, low in toxic hazards, and it serves as a valuable adjunct to pyrethrins. In this way, it will help to spread the limited supplies of the natural product, particularly in insecticides having low toxic hazards to humans and animals.

Allethrin is a valuable insecticidal agent. It is finding its greatest immediate usefulness in household aerosols and sprays designed primarily for the control of flies. In the case of aerosols, U.S.I. research has shown that combinations of allethrin and of allethrin and pyrethrins with piperonyl butoxide are both effective and competitive with present formulas. Various combinations have been thoroughly tested, and U.S.I. has available for industry approved formulas and complete formulations, as well as the chemicals themselves, individually and in combination. Combinations of pyrethrins and piperonyl butoxide are well-known in the industry under the U.S.I. trade name Pyrenone.

New Data on Proteins And Amino Acids in Feeds

A newly revised edition of the booklet entitled "Proteins and Amino Acids in Animal Nutrition" has been made available to feed manufacturers and feed formulators by U.S.I. This article, written by a prominent nutritionist, presents the most recent data available on amino acid supplementation of vegetable proteins in feeds. Copies of this new revised edition may be obtained by writing on your company letterhead to the Editor, *U.S.I. Chemical News*.

Find Ferric Chloride Checks Artery Hardening

The simple iron salt, ferric chloride, may prove to be the means for preventing or controlling hardening of the arteries, according to recently disclosed research. Lengthy tests on chickens, the best animals for studying this disease, have shown that ferric chloride blocks the fat-absorbing machinery of the body. By doing this, it keeps cholesterol—the offending component of fatty foods—from passing into the blood stream where it can form harmful deposits.

Experimental tests showed that cholesterol is absorbed from the intestinal tract with the aid of active salts in the bile. Ferric chloride, it was found, effectively inactivates this property of the bile salts, thus suppressing the passage of cholesterol into the blood stream. Even when test birds were put on high fat and cholesterol diets, the iron salt was able to keep fat and cholesterol in the blood at nearly normal levels. Microscopic studies of the arteries after four to six months showed that the birds had also been protected against arteriosclerosis, or artery hardening, according to the report.

New Freight Car Handles Dry Chemicals in Bulk

A new type of freight car, which is said to make practical and highly economical for the first time the bulk shipment and handling of a wide range of dry powdered materials, was put on display recently. Products for which the car is suitable include feed stuffs, chemicals, starches, and similar commodities previously considered impractical for bulk handling, according to the announcement.

Described as a radically new type of covered hopper car, the equipment is claimed to make available to shippers substantial savings in containers, dunnage and labor. In addition to these savings, the car also provides improved sanitation and less danger of contamination of the product, it is said.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

A new waterproof, heat resistant adhesive is described as a thermosetting, self-curing cement which is neutral when cured and resistant to salt and fresh water, fungus, many acids, solvents, and lubricating oils. **(No. 940)**

A new non-drip tinless can for both thin and viscous materials features a turned in lip on a nozzle which cuts off the flow of liquid after pouring. The plastic cap closure is also a measuring device. **(No. 941)**

A fluorine-containing anesthetic, trifluoroethyl vinyl ether, is claimed to be faster acting and to reduce tremendously the fire and explosion hazards associated with use of conventional ether. **(No. 942)**

To control algae, scale, and bacteria in spray ponds, cooling towers, other water applications, compounds are available which will not precipitate in alkaline water, contain a wetting agent for quick penetration, and will remove calcium carbonate scale, it is said. **(No. 943)**

A new cleaner and wash for aluminum, stainless steel, and chrome surfaces is claimed to be easy to use and to leave an invisible coating which protects against further discoloration. **(No. 944)**

For drilling holes in glass, concrete, tile, plaster, brick, stone, etc., a new type drill for hand and power tools is also claimed to be ideal for drilling new holes in hardened dies, fixtures, tools, and broken studs. **(No. 945)**

A new non-ionic surface active agent, especially tailored for emulsion paints is said to be both a powerful emulsifying and wetting-out agent, and to be effective in low concentrations. **(No. 946)**

To prevent rusting of steel, cast iron, etc., during storage, a new concentrate used in water solution reportedly leaves an almost invisible film which can protect the steel against rusting in 100% humidity for several weeks or more. **(No. 947)**

A combination flask and separatory funnel has a flat bottom for heating, can be manipulated to draw off either the heavier or lighter liquid, permits a variety of chemical operations to be carried out without changing containers, the manufacturer states. **(No. 948)**

To seal out dampness and moisture in masonry, a new cement-based powder containing silicones and metallic compounds is claimed to form an irreversible, insoluble compound which fills and expands in the pores and repels water. **(No. 949)**

Chemical Week
BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

Mathieson's new hydrazine plant (CW, July 18) won't be a one-company affair after all. The newcomer: Olin Industries, which continues to head deeper into the chemical industry.

Here's how Olin edges into the picture: a new company, equally owned by Mathieson and Olin and dubbed the Matholin Corp., will acquire the $3-million Lake Charles, La., plant just completed by Mathieson.

And the why of the move:

- Olin holds patents on certain phases of the process being used in the new plant. (John M. Olin, president of Olin and of the new company as well, personally engaged in hydrazine research as long ago as 1912; also worked on azide derivatives of hydrazine widely used in the last war.)
- Olin's experience in explosives, expected to be one of the big markets for hydrazine.

Besides running the plant, the new enterprise—to be managed as a separate company—will devote much of its energies to hydrazine research.

•

New capital from a new source is now available to the chemical (and other) industries as a result of a court decree (July 17) giving Electric Bond and Share Co. the green light to invest in industrial enterprises.

The amount now on hand for such purposes totals about $25 million. And another $30-35 million may be put in the kitty over the next two years.

EBS has already indicated interest in the petrochemical field, is financing (jointly with United Gas) a petrochem research program conducted by National Research. This research partnership dates back to early '51, is aimed at developing new processes or products based on natural gas.

But in the main, EBS intends to invest in established growth companies rather than in new ventures.

•

And growth companies are going to need outside capital. Many optimistically planned on the excess profits tax dying, putting more money into company coffers this year for expansion (or dividends).

But most had reconciled themselves to an Administration victory on this issue, took in stride last week's "official" extension of excess profits tax until Dec. 31.

•

One of the process industries' "growingest" divisions—resins—continued to bowl along last week:

- Reichhold Chemicals decided to build a new synthetic resins plant in the Fairfax Industrial District of Kansas City. As with its other resins units, Reichhold picked a spot close to consumers—in this case, fibre glass plastics, surface coatings, foundry and aviation industries.
- Molded Fiberglass (Ashtabula, O.) sublet to Lunn Laminates (Huntington, L.I.) a contract to produce 300 reinforced plastics bodies for Chevrolet's "Corvette." Reason is that Lunn (also with a plant in Ashtabula) employs "bag molding," a rather low-production, high-cost method.

But Molded is not interested in that method, is installing matched metal dies for a more-or-less automatic process it will use in turning out the

bodies. It expects to have 60 sets of dies installed early next year, and is building a new plant to house them. They are coming in at about two a week, and are going into production as received.

•

If long-term private financing is any criterion, chemical expansion is still big, but tapering. The 1953 Yearbook of Private Placement Financing, just published, points out that 32 firms borrowed $354,238,000 last year from insurance companies and other institutional investors. That's quite a drop from the $831,242,000 taken by 38 firms in 1951.

Among the big borrowers (over $10 million): American Cyanamid, Monsanto, Mathieson, Hooker, Davison, Goodrich, Columbia-Southern, Rohm & Haas, Godfrey L. Cabot.

•

From a different angle comes another reflection of the chemical industry's postwar growth. Of the 188,523 U. S. patents granted since 1946, almost a fifth (35,772) are in the chemical field. Electronics—a fallow sector for invention—ran a poor second with some 10,000 patents.

•

Much of the grist for the research mill, of course, is government money, and this week a National Science Foundation report sketched the outline of federally supported science activity:

- Out of the $2.2-billion outlay, $338 million went to non-profit institutions, including 225 colleges and universities.
- Four federal agencies—Defense, Agriculture, Atomic Energy Commission and Health, Education and Welfare—spent 98% of this money.
- Only one dollar out of five went for basic research. The balance was spent on applied research and expansion of facilities.
- Government-sponsored research is more and more being divorced from the schools' normal objective—teaching.

•

That latter point—impact of federal research on scientific manpower—has the Foundation concerned. It's now starting to gather data, find out how the land lies. Grants have already been made to several scientific societies to set up registers of scientists and engineers, and a total of ten societies will eventually participate.

•

Tempers flare in the July heat, and two chemical firms were prey to petulance this past week:

- Kentucky is asking a grand jury to indict National Carbide for air pollution. Air Reduction, the parent firm, appealed a $100 fine last March. If an indictment is returned and successfully prosecuted, the Louisville plant could be fined $100 for each three minutes' offense. That adds up to $48,000 for a 24-hour day.
- The high cost of chlorinating has the Buffalo Sewer Authority up in arms. Although the city is surrounded by chlorine makers, only one—Mathieson—bid for the 2 million lbs./year business. The $5.70/100 lbs. bid evoked cries for a "government investigation." This week the Authority rejected the bid, accepted an informal offer at $5.20 from John Wiley Jones Co.

•

Fish taking sleeping pills? More than 3 million of them, in California. Fish and game officials learned that drugged fish thrash about less, require less water when they're carried to streams for "planting."

. . . The Editors

Can *"Industrial Fore-Site" Play a Part in Your Future Growth?

*"Industrial Fore-Site"—*A shrewd management quality that gets the jump on competition by choosing plant sites with superior economic advantages.*

Why "Fore-Site" for Chemicals Points to Southern Illinois

Power
6 electric companies serve area; 5 new power generating stations.

Water
Unlimited water supply available from the Ohio and Mississippi Rivers.

Natural Resources
4,720,000 acres of timber. Limestone, other rocks, red clays and minerals.

Fuel
One of the leading coal, oil and gas producing regions in the nation.

Labor Relations
Generally good. Labor force of 400,000 in area. Seasonal unemployment.

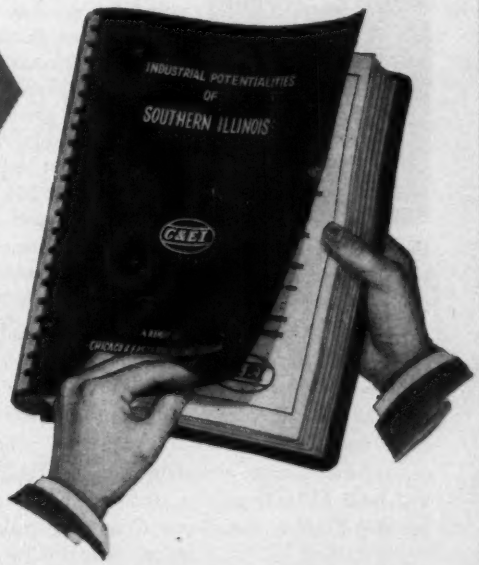
Transportation
Region served by eleven railroads and by river barge lines.

Write for this 323-page Guide to "Industrial Fore-Site"

The most detailed possible site survey data about Southern Illinois

- Documented ratios of industrial costs to factors for plant location analysis.
- An entirely new type of analysis-in-depth of management and labor relations.
- Detailed charts of energy consumption and rates for quickly determining electrical power costs for any type plant in the area.
- A directory of 3,500 businesses and industries in the region.

Your Consulting Engineering Firm will find this information of great value in analyzing Southern Illinois in relation to your needs.

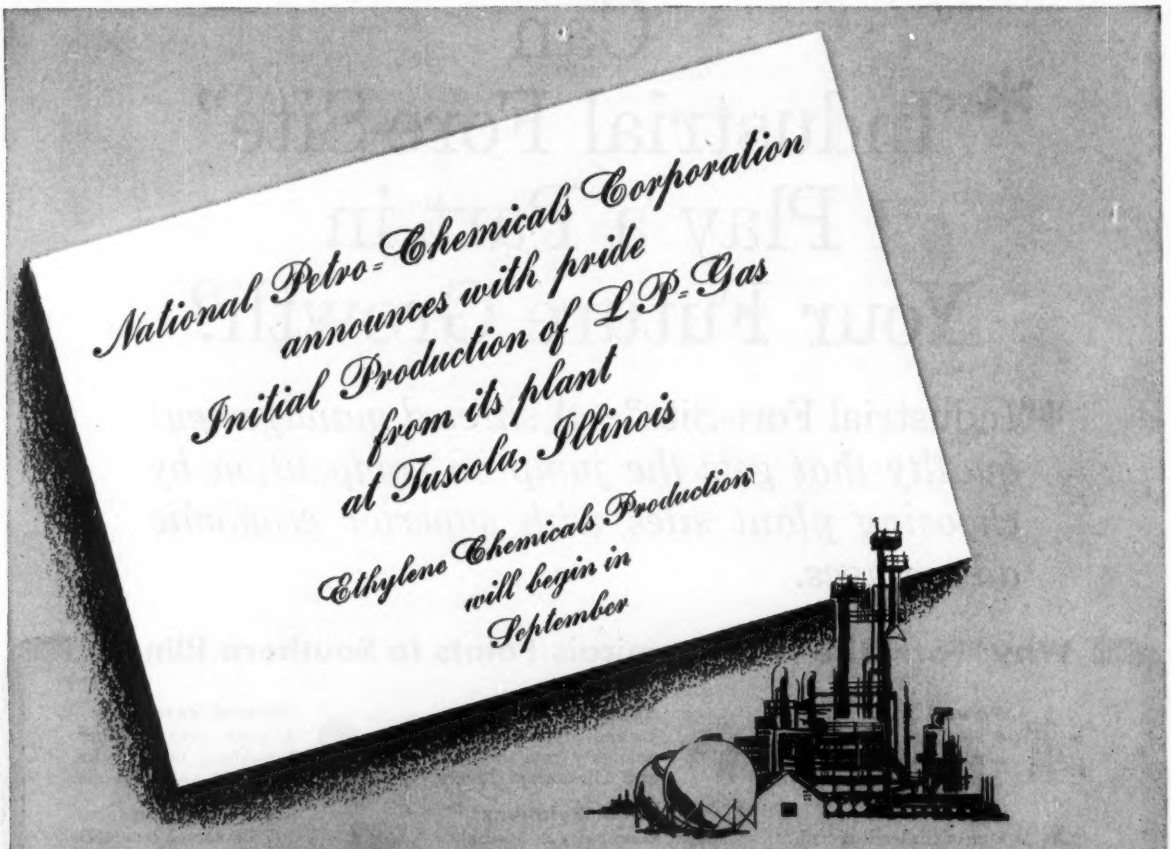


Write in confidence to: Chief Economist,

CHICAGO & EASTERN ILLINOIS RAILROAD

332 SOUTH MICHIGAN BLVD. • CHICAGO 4, ILLINOIS

C&EI



A NEW SUPPLY of liquefied petroleum gas has become available through the opening of National Petro-Chemicals Corporation's giant natural gas stripping plant at Tuscola, Illinois. This is the first step in the completion of a $44 million project which will include the largest ethylene plant in the world. The ethylene will be used to make synthetic ethyl alcohol, ethyl chloride, and later the wonder plastic, polyethylene.

Located on the Baltimore & Ohio Railroad, at the junction of the natural gas pipe lines of the Panhandle Eastern Pipe Line Company and the Trunkline Gas Company, the plant will process 400 million cubic feet per day of natural gas. Daily production of propane, butane, isobutane, and natural gasoline will total 450,000 gallons, and will be distributed by the Phillips Petroleum Company, makers of "Philgas." Ethane recovery for the production of ethylene will amount to 10 million cubic feet per day.

Off-season storage for propane will be provided by a 6 million gallon underground cavern which will supplement conventional working storage consisting of 35 horizontal steel tanks each with a capacity of 50,000 gallons. Butane, isobutane, and natural gasoline will be stored in 4 Hortonspheres with a total capacity of 900,000 gallons.

Tank car shipments of LP-Gas will be handled at a 40-spot loading rack designed to load a day's production in 8 hours. Tank trucks will load 24 hours per day at 3 islands equipped with 6 propane spots and 3 spots each for butane, isobutane, natural gasoline.

Latest procedures in quality control and modern laboratory facilities have been incorporated to guarantee industry products that perform as specified.

This new project has everything for the long-term contract user of bulk petro-chemicals. The future belongs to petro-chemicals. Why not let "PETRO" help you plan today for a better tomorrow!

NATIONAL PETRO-CHEMICALS

CORPORATION

A joint enterprise of National Distillers Products Corporation and Panhandle Eastern Pipeline Company

120 BROADWAY, NEW YORK 5, N. Y.

July 25, 1953 • Volume 73 • Number 4

Chemical Week

BUSINESS & INDUSTRY . .

WHAT MAKES THEM SAY 'OUCH'

Chemical companies hurt by:

Foreign tariff rates too high	52.4%
U.S. tariffs too low on chemicals	45.2%
U.S. tariffs too high on raw materials	28.6%
(Not hurt by any tariff situation)	23.8%

Desperate for Dollars

With U.S. exports exceeding imports by more than $3 billion a year, foreign companies—including chemical firms—are ravenous for American currency.

Facing ever keener competition from abroad, U.S. chemical concerns favor reciprocal trade law but ask for protection on specific items.

How foreign chemical companies sell cheap here in their fight for U.S. cash: Low production costs, currency manipulations, small profit margin.

Hunger on the part of foreign countries for United States dollars is begetting commercial practices that make this nation's trade-and-tariff policy a matter of life or death for much of our chemical industry.

This disturbing fact shoulders its way through the rest of the data to occupy first place among findings in CHEMICAL WEEK's just-completed survey on how American chemical companies feel they are affected by current tariff rates, domestic and foreign.

Other findings merely support suppositions already entertained by most industry observers. Among these:

- That a large fraction of this country's chemical industry is dependent on U.S. tariffs for protection against competition from foreign firms that have lower production costs.
- That, despite higher wages in the U.S., many specific chemical products can be made more economically here, and could be sold at reasonable profit in foreign countries if it weren't for high foreign tariffs.
- That a few chemical companies could sell their products at considerably lower prices if their material costs weren't boosted by high U.S. tariff rates on imported raw materials.
- That some companies (e.g., sulfur producers) are in the enviable position of selling products that are in demand everywhere, and for which tariff walls are practically nonexistent.

Cutting and Dumping: Methods to which foreign companies are resorting in their efforts to snare more dollars generally are not new; but their potential effect is greater because the chemical industry has grown to become an increasingly large and important component in the U.S. economy. If foreign competition had killed off the American chemical industry 30 years ago, it would have been murder; now, it would be a massacre.

Among CW's survey replies received, prevailing sentiment is for keeping the country's present tariff policies in effect for the next year or so, with occasional cautious adjustments to permit more international trade in instances that would be for the good of all parties. Ultra-protectionist feeling is limited to a very few companies.

But nearly all replies showed a keen awareness of the need for protection on specific products. Chemical business men approve of low tariffs in principle, but find that they need high-tariff shielding in certain lines. Typical was this remark: "Our company has always been interested in foreign trade and has not particularly sought high tariffs. We have been terribly concerned, though, of late, by what we consider unfair competitive practices of foreign sellers." Such practices include "dumping," cut-throat price-cutting, and currency exchange manipulations.

The Squeeze-out: What the American chemical industry is afraid of is illustrated by the following example, which is a device that some foreign companies are beginning to exploit again today. One large company relates in its reply:

"In 1919, we began production of an acid in a small way and during the period of license control of synthetic organic chemicals under the Emergency Tariff Act [1921-'22] our production was increased to a level sufficient to supply the domestic demands. The Act of 1922 terminating license control failed to mention [this product] and it became dutiable at 25% ad valorem. The Germans immediately began to flood the market with material priced below cost, and exactly 61 days after passage of the Act, we were forced to abandon production and scrap our plant. As soon as we did this, the price of [the] German acid in the domestic market was raised . . . The German monopoly continued until 1928 when we began operation of a small pilot plant. The Tariff Act of 1930 provided a duty of 3¢ per pound . . . and only then were we able to expand production substantially."

This company believes that American business is willing and able to compete in the domestic market with foreign producers "if the competition is equitable in terms of service and quality." It advocates the use of flexible tariff rates to make up for unequal costs of production. "If, because of low labor rates, it costs 10¢ per unit to produce Product X in France, and 15¢ in England, while because of higher labor rates here the unit cost is 20¢, then the import duty on Product X should be 10¢ when imported from France, and 5¢ when imported from England."

Shipping Is Cheap: Nearly every company that said it's being hurt by imports listed "foreign wages" as the principal factor in lower production costs abroad. Next in this ranking was "lower costs of materials," followed by currency manipulation, foreign government subsidies, lower foreign taxes, cartel operations ("these

WHAT THEY WANT FOR FUTURE

Companies favoring:

Reciprocal treaties for low tariffs, to encourage international trade	52.4%
Reasonabe tariff rates and quotas on imports	28.6%
Keep tariff rates on approximately their present levels	9.5%
High, protective tariffs	4.8%
Free trade	4.8%
Adjustment toward eventual free trade	4.8%

are just beginning again"), lower power costs, and low ocean freight rates in foreign bottoms.

While most of these companies estimated that U.S. tariff rates would have to be increased by from 10 to 25% in order to discourage dumping, one Texas firm suggested doubling certain duty rates for good measure. Many companies mentioned the dumping problem; some advocated a system of import quotas as a means of controlling that practice. Motivation for dumping was most succinctly summed up like this: "They sell at short profit in order to secure United States dollar exchange."

Trickiest scheme is that of currency manipulation. One Eastern company reports: "Biggest factor in Europe and Brazil, and to some extent India, is [use of] special trade agreements involving foreign exchange rates that permit great disadvantage in selling through one or two countries [instead of directly] to the U.S.A. Frequently a certain product is delivered in the U.S. below its true cost in the country of its origin, merely because some country wants U.S. dollars. For example, Brazil sells to France, which dumps in the U.S. to get dollars."

Foreign Sales Barred: Canada and the United Kingdom currently have the tariff schedules that seem to be frustrating the most chemical companies in the U.S. Other foreign nations whose tariff rates tend to cut into potential sales of Yankee chemical companies and their customers are given as France, Italy, South American countries, Mexico, Australia, Ireland, Belgium, Scandinavia, India, Switzerland, West Germany and South Africa.

On specific products, those Yankee chemical firms involved estimate that their sales could be augmented by proportions ranging from 3 to 10% if foreign tariff walls were lowered to permit competition with companies in those lands.

Products that the American companies believe they could peddle in those countries if customs rates allowed include resins, dyestuffs, dye intermediates, calcium and sodium phosphates, adhesives, coatings, pharmaceuticals, aluminum sulfate, caustic soda, benzoate of soda, sodium sulfide and sodium trichloroacetate.

Few Hurt Here: Only a few American chemical companies say they've been held back by U.S. tariffs levied on incoming raw materials and intermediates. Those who are able to make a guess figure that their total sales volume might be boosted by around 10% if they could buy those imported materials without painful tariff charges.

A company that does a two-way business in coal-tar products, buying cyclic compounds and selling as resins, says it would like to see U.S. tariffs on such products reduced by 50%. It further recommends:

- "Ad valorem duty should be calculated on European selling price when it is lower."
- "Duty should be suspended on items in short supply."

Products that these Yankee firms would like to acquire more cheaply include flaxseed, phthalic anhydride, pentaerythritol, vinyl resins, and various coal-tar products.

Germany Top Rival: Most frequently listed as the source of chemicals that have been selling strongly in this country in competition with domestic products is West Germany. England is runner-up, with Belgium third, Holland fourth. Others: France, Switzerland, Japan, Brazil, India.

Financial damage inflicted by this cut-rate competition varies. One company in the Niagara Falls area says its sales on a particular product could be upped by 50% if U.S. tariffs were "adequate." At the other extreme, a mid-Atlantic company admits it's losing sales on one inorganic chemical to foreign competitors, but goes on to say: "Considering the over-all situation, we would not favor action on this minor issue."

Dyestuffs are the product most frequently mentioned as an import that hurts sales of domestic chemical companies. Others singled out: organic intermediates, chlorophyll substances, pharmaceuticals, pigments, bicarbonate of soda, potassium nitrate, several organic acids, and sodium and calcium phosphates.

Indirect Blow: One company doesn't run into any tariff trouble of its own, but says that "foreign tariff practices that adversely affect customers of our products, in turn, adversely affect our domestic business."

Low-Tariff Consensus: It isn't surprising that chemical companies think that foreign tariffs are too high; not one ventured to say that foreign tariffs are too low.

Although nearly one-fourth of the companies in this survey indicated that they are free of tariff headaches, it's likely that some of them are actually as close to the problem as the firms most acutely aware of foreign import dangers. This is because of the interdependency of chemical companies. A supplier, for example, may not feel the hot breath of foreign competition on his neck; but he'd be in a bad way if imports suddenly put his major customers out of business.

The basic situation, which finds foreign companies eager to compete with U.S. establishments for the Yankee dollar, is not likely to change soon. Since 1930, when the present fundamental tariff law was enacted, this country's exports have averaged more than $3 billion/year higher than total imports into the U.S.—meaning that foreigners think the U.S. should start spending some $20 billion/year on imports, instead of only around $10 billion, in order to even the score.

Problems underlying the tariff question are crucial; the way that they're resolved will determine the course of history. Among these dilemmas now confronting the United States:

- How will the present balance of trade—or rather, the imbalance—affect our allies, on whom we're depending for political, military and economic support?
- What will be the consequences here and abroad, of the present trends in international commerce, with material goods moving out of the United States and money (or credit) draining into this country?
- What would happen to the American chemical industry and other industries concerned with foreign competition if the United States should liberalize its tariff policies?

SCHWOB: A new cutback on a hardly started campaign.

Clipped Even Shorter

The government's economy drive is further clipping the wings of the federal water pollution control program. Congress, which is now in the midst of appropriation hearings, hasn't allowed money for any of the grants or loans called for in the federal water pollution control law. The total promised—which will hardly take care of administration of the law alone—is $1 million, 30% below last year.

Final word on the exact amount Congress will allow is expected within the next week. But it won't be over a million dollars. In recognition of this, Carl Schwob, chief of the division of water pollution control of the U.S. Public Health Service, has already had to lay off about a third of the sanitary engineers, chemists and other workers.

Second Knockdown: The cutback comes at a time when PHS thought it could really begin to move ahead. And it's the second big delay. Just about the time they were getting up steam, the Korean fighting began, forcing postponement of pollution abatement projects.

Most of the $135 million authorized for the first five years of operation was never appropriated. And thus, no action has been taken on some parts of the act.

Money was to be spent for: (1) loans to municipalities for building treatment plants ($22.5 million/year), (2) state pollution abatement planning ($1 million/year), (3) state and interstate research on industrial wastes ($1 million/year), and (4) administration of the law ($2.5 million/year).

Since 1949, Congress has never appropriated money for municipalities or state construction planning. Only $2.9 million of the $5 million promised for industrial waste research was given, and only 5.5 million of the $12.5 million authorized for administrative expenses.

Birds of a Feather: Because of the economy drive in Washington, the states are economizing, too.

The pollution control act set up methods by which Washington could give the states financial and technical aid on a dollar-matching basis. During the first three years of existence of the act, when Congress did appropriate some money for state grants, the states also voted appropriations. Now, under stimulus of the law, most states have either a control board or a separate unit in state department's of health devoted to pollution control.

The match-funds brought some significant successes. For example, there's the New England Interstate Water Pollution Control Commission, which started a major survey and investigation with federal money in 1949. Research contracts were given to half a dozen colleges.

By 1952, a number of the projects were complete. Notable among them was one that gave a new look to the problem of treating textile wastes.

But this commission and the states comprising it received no help from the federal government in the last year, and will get no help this year.

Industrial Wastes: Congress, in the law, said the government was to support and aid research on industrial waste treatment methods. The responsibility, as Controller Schwob points out, still lies with industry. And industry, through the National Technical Task Committee on Industrial Wastes, has accepted the responsibility. The committee, set up in 1950 under USPHS guidance, coordinates and promotes needed research in the field, and aids in its dissemination. Thirty six major industrial groups, covering 10,000 individual plants are represented by the 53 members of the committee.

As one of the major groups, the chemical industry has a tough problem since ordinary methods of water treatment may not be effective in treating chemical effluents. Too, some wastes present in extremely small quantities may ruin chances for acquatic life in streams.

Therefore, the chemical industry hasn't taken to kindly to the statewide "standards of water quality" suggested as a method of cleaning up streams. These standards simplify the task of the regulatory agencies, but, as Richard Hoak of the Mellon Institute pointed out at a symposium on water use, they are unjustifiable on the scientific and economic basis.

The other federal suggestion to the states—that of a uniform pollution law—may be advantageous to the chemical industry on a long-term basis. For one thing, a uniform law would see to it that industry is not confronted by an array of dissimilar state requirements. Variations in requirements would be extremely important in some highly competitive fields; a uniform law would treat everybody equally.

With the present financial discouragement to federal action, industrial plants may get a brief respite from legal worries over pollution. Such relief, short though it may be, might last at least long enough to give companies a chance to examine, analyse and act to remedy any pollution problems.

Two Up, One Over

The House of Representatives last week began its long-awaited hearings on bills involving chemical additives and pesticides used both in growing and preparing food.

But only two bills—out of the five up for consideration—were discussed in hearings before a House Interstate and Foreign Commerce subcommittee. The pair: H.R. 4277, the pesticide control bill introduced by Ne-

braska's physician congressman, Rep. A. L. Miller, and H.R. 5055, sponsored by Maine's Rep. Robert Hale, which would simplify the setting or changing of FDA's standards.

The committee apparently felt that only these two bills had any hope of passage before Congress adjourns for the year. Such measures as the chemical additive control bills sponsored by Miller and Rep. James Delaney were considered too controversial to stand even a ghost of a chance of 1953 enactment.

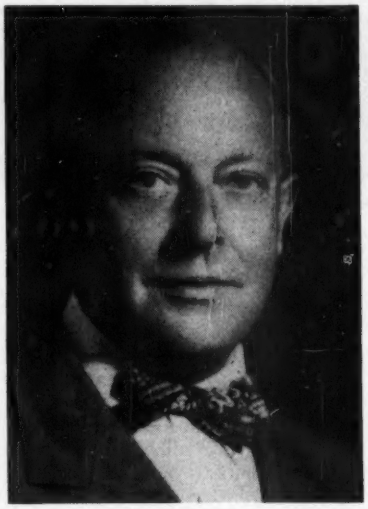
And of the two bills discussed, the committees seemed to have predicted correctly on only one—the bill to simplify setting food standards. The only things found wrong were minor technicalities. This seemed to bear out the comment made by sponsor Hale who reported hearing "no whisper of opposition from anyone." Opposition to the Miller pesticide proposal came more from the government than from industry. One possible reason came out when congressmen queried industry witness Lea Hitchner, executive secretary of the National Agricultural Chemicals Assn. He, it developed, had worked closely with Miller in drafting the measure.

Standard Simplification: In brief, the Hale bill would do two things to shorten the standards procedure: It would allow food standards to be set as result of informal hearings—reducing time and cost of standardization to both government and industry. (Any party could ask for formal hearing if the case should go to court.) It would assure manufacturers of ingredients the same rights that the maker of the food has in asking for hearings. (This point would write into law the FDA's present procedure which, for instance, allows the maker of a bread softener the same hearing rights as the maker of bread.)

Witnesses representing the FDA and lawyers who practice before it supported the measure. In the words of one attorney, it would "go a long way to make possible more practical and less costly food standardization."

Pesticide Flare: Miller bill hearings strongly contrasted with the tranquility of those on standardization. Three members of Congress, two federal judges and 11 other witnesses appeared in person; in addition, statements were filed by three cabinet members and 12 trade association and research representatives.

In a statement entered in committee records, sponsor Miller* gave this outline of his bill: it would (1) require the "exploiter" of a new pesticide to prove safety before use, (2) give the FDA 90 days to take action, (3) provide for establishment of a panel of unbiased experts to advise FDA, (4) allow court review of the technical facts in the case, (5) recognize the difference between use of pesticides during the growing of food and the use of intentional food additives, thus set up a separate section of the Food, Drug & Cosmetic Act for them, and (6) provide for coordination with the Dept. of Agriculture-administered Federal Insecticide, Fungicide & Rodenticide Act of 1947.



NACA'S HITCHNER: Aid and support for "sound legislation."

Giving Support: The first witnesses, all congressmen, praised the measure. One was "enthusiastic," another felt the bill was "tremendously important." Florida's Rep. "Billy" Matthews averred that not he alone, but "all the leaders of the great agricultural industry are for it, too."

Said NACA's Hitchner: " . . . criticism and scare publicity [have raised the question of whether there is] adequate legislative control. While we feel that existing legislation, if properly administered and enforced, would provide adequate protection to the public . . . the most appropriate manner of improving present pesticide controls is by improving the tolerance-setting procedure."

In Rebuttal: A statement signed by the Secretary of Health-Education-Welfare gave several specific objections. Among them: The bill would require that a tolerance be established even if the "need" for the pesticide is not demonstrated. The short time limit might force issuance of hasty and ill-considered regulations. The bill does not require petitioners to have developed techniques to analyse for pesticide residue. It provides for tolerance standards for single pesticides, ignores cumulative tolerance to related compounds.

Two federal court chief judges felt that the bill's provision to allow the courts to judge technical facts of a case, rather than just whether laws were being administered capriciously, was "extraordinarily novel."

Under questioning, however, one of the judges admitted that a hearing on whether the FDA was depriving a claimant of its rights under the "due process" clause in the constitution is justified.

FDA Commissioner Charles W. Crawford brought out a point not covered in the Health-Education-Welfare Dept. statement. The bill, as now worded, would require that tolerances be set for "unnecessary" fungicides used as food preservatives, rather than as fungicides.

Food Forecast: It seems almost sure that the questions raised at this hearing will prevent the bill from being reported to the full House of Representatives. And even if it got to the floor, passage this session is rather unlikely.

The food standards amendement, on the other hand, may fare slightly better. The lack of disagreement between industry and the FDA might make possible a favorable report to the full House. It would then stand a chance of passage.

EXPANSION. . . .

Phosphates: Virginia-Carolina Chemical Corp. will build a new production unit to manufacture phosphoric acid, sodium tripolyphosphate in Fernald, O. Construction work will begin immediately, will be handled by United Industrial Constructors.

•

Ferromanganese: The Pioche Manganese Co. has started production of ferromanganese at Henderson, Nev., capping off nearly two years of construction, conversion work on old BMI facilities. The company is now using a 7,500 kva. electric furnace, expects to have a second furnace in operation this summer.

•

Cryolite: Reynolds Metals Co.'s plant for the recovery of cryolite has just gone into operation at Longview, Wash. A new process reclaims costly cryolite from plant fumes and car-

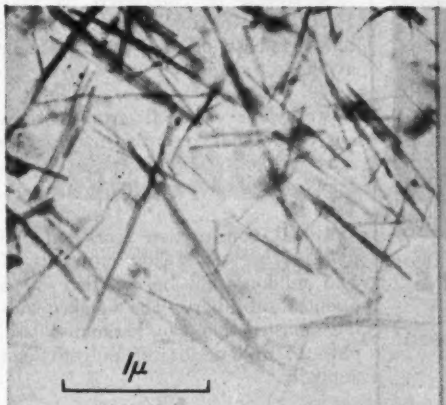
* Miller would have presented it in person, but was hospitalized the evening before the hearing.

Can this new different powder be used in your product?

THIS IS ATTASORB—a low-priced, ultra-fine *adsorptive* material—our versatile newcomer from the mineral attapulgite, a hydrated magnesium aluminum silicate.

CONSIDER THESE PROPERTIES. ATTASORB is highly sorptive (active surface area 120 sq. Meters/Gm.); it is chemically inert, grit-free and lightweight. Its particles are extremely fine. It wets and disperses readily, and forms a satisfactory suspension in aqueous and organic liquids.

Other characteristics—such as light cream color, anti-caking and free-flowing properties—help spotlight ATTASORB for specific end uses.



Electron photomicrograph at 22,000 magnification of attapulgite, from which ATTASORB is derived. Aggregate particle size of ATTASORB (air permeation) 0.4-0.6 microns; ultimate particle size (super-centrifuge) 0.1 micron.

ATTASORB HAS CAPTURED THE IMAGINATION of many manufacturers . . . as a polishing agent in all types of polish formulations (specific bulletin on request) . . . as a flattening agent and pigment extender in oil and water base paints . . . as a conditioner for fertilizer chemicals. Unique properties strongly suggest its universal suitability as a bodying agent, filler, extender, strengthener or anti-blocking agent.

THE PRICE IS LOW—2½c to 3½c per pound in carload lots, depending upon the freight charges.

WE INVITE YOU to evaluate ATTASORB for use in *your* products. Detailed data sheet and generous free sample are yours for the asking.

ATTAPULGUS Minerals & Chemicals Corporation

DEPARTMENT A

210 WEST WASHINGTON SQUARE, PHILADELPHIA 5, PA.

bon linings of the aluminium-reduction potlines, making the plant self-sufficient.

•

Fertilizer: Carstens Packing Co., Tacoma, Wash., is building a $175,000 fertilizer plant, expects to have it in operation by the first of next year. Capacity: 20,000 tons/year.

•

Plastics: The Bakelite Div., Union Carbide and Carbon Corp., New York, has started work on a nine-unit plastic materials plant at Marietta, O. The first unit (costing over a million dollars) should be completed by mid-1954; no estimate on a completion date or cost of the total plant is available, however.

•

Polyethylene: Official ground-breaking ceremonies recently marked the start of construction work on Spencer's polyethylene plant at Orange, Tex.

Actual construction work on the plant, expected to cost upwards of $25 million, will be handled by a Spencer subsidiary, The Quaker Valley Construction Co. Estimated output: 45 million lbs. of polyethylene annually.

•

Methionine: Construction of buildings will be well launched within the next 30 days at Du Pont's $4-million methionine plant between Beaumont and Nederland, Tex. Work has already begun on the company's railroad track, which will tie in with the Kansas City Southern line.

C. S. Anderson, field projects manager, says plans call for completion of the plant sometime in 1954, but actual operation "probably will begin in the early spring or summer" of that year.

Getting Together

A European Federation of Chemical Engineering has been formally christened at a meeting, held last month in the Maison de la Chimie, Paris. Purpose of the federation: to promote European cooperation in chemical engineering. It's the fruit of the ACHEMA X Chemical Engineering and Equipment Exhibition held last year. Present members include representative organizations from Spain, Yugoslavia, West Germany, Finland, Portugal, Netherlands, France and Switzerland. Many other technical and scientific societies (in Norway, Denmark, Luxemburg, Austria) signify early intent to join the group, to capitalize on "the healthy interchange of ideas and processes in today's highly competitive chemical race."

Starting point for quality products

Quality products begin with quality ingredients. That's why Nialk Chemicals are used today in so many exacting applications.

for example...

NIALK TRICHLORethylene: For fast, low-cost degreasing of metal parts, NIALK TRICHLORethylene is enjoying a rapidly growing acceptance. This superior degreasing agent cleans and dries in record time...is nonflammable...can be heated by either gas, steam or electricity...and is completely re-usable after distillation.

It is dependable performance like this that has earned for all NIALK chemicals the confidence of many American industries.

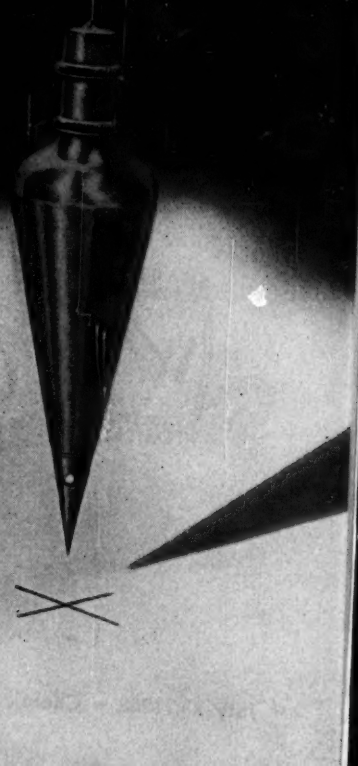
NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York

Nialk

LIQUID CHLORINE
CAUSTIC POTASH
CARBONATE OF POTASH
PARADICHLOROBENZENE
CAUSTIC SODA
TRICHLORethylene

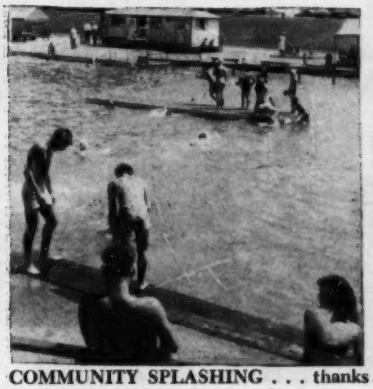
NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)



SHOE SCRAMBLE variation . . . provokes hilarity at Monsanto outing.

YOUNGSTERS dive in at Cyanamid . . . come up soggy but unbowed.

CLOWN-FOR-A-DAY Bozo Bishop obliges with a balloon animal.



COMMUNITY SPLASHING . . . thanks to North American Cyanamid.

SQUARE DANCING for Carbide devotees . . . strenuous at best.

Pleasure with a Purpose . .

Like peeling noses and dripping bathing suits, company picnics go hand-in-hand with summer. Today's version, however, has as many twists as it has essentials. Every company seems to brand its own special type of fun-making; only the carloads of food and room to romp are absolute necessities. But there's one common denominator: all rate picnics as top-rate employee relations builders.

This week CW skips through the chemical industry's roster of picnics, finds that from the Gulf of Mexico to Coney Island, imaginative outing officials have gone all out to set a new high in revelry. Setting the pace:

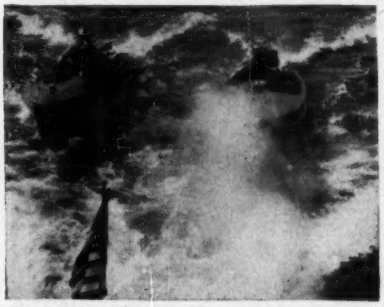
• Du Pont employees at Explosives' Barksdale Works in northern Wisconsin go in for fishing parties on Lake Superior, enjoy trout dinners topped off with iced watermelon. Their counterparts, at the Sabine River Works in Texas show equal enthusiasm for fishing, go in for all-day shrimp parties on the Gulf of Mexico.

• Ethyl Corp., Houston, picnickers prefer a galaxy of muscle contests, run through three-legged races, rolling-pin throwing contests, carnival rides. Special feature for harassed parents: presence of a staff of registered nurses to ride herd on the very young.

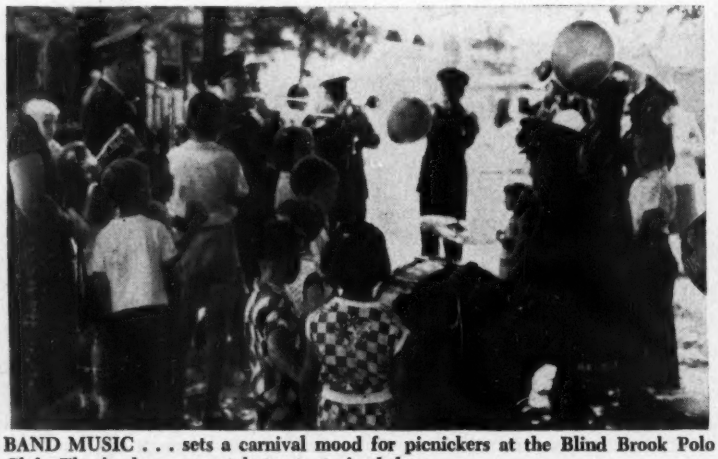
• Shell Chemical Corp., Houston, sun worshippers choose to invade Galveston park, mix bingo with organ-grinders, and ferris wheels with nail-pounding contests. Spirit of the carni-

TARGET PRACTICE for Shell rolling pin tossers . . . even the fair sex get into top form in Houston, Tex.

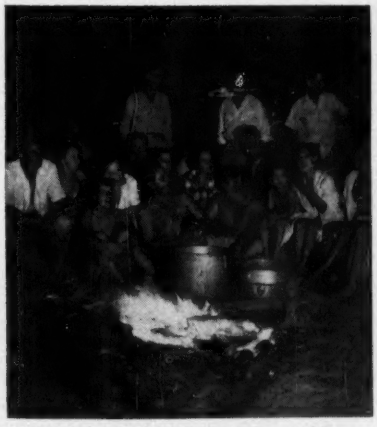
TURNSTILE DUCKING . . . a thrill, not a felony when Pfizer takes over.



WALTON DISCIPLES—Du Pont style—turn on the speed.



BAND MUSIC . . . sets a carnival mood for picnickers at the Blind Brook Polo Club. They're keen on acrobat acts, trained dogs.



NET YOUR OWN shrimp, say Sabine enthusiasts . . . they're mouth-watering.

. . That's Today's Company Picnic

val midway atmosphere steals childish hearts, enchants their elders with dreams of youth—coincidentally gives employee-staff relations a shot in the arm.

• Monsanto's John F. Queeny plant employees junketed out to Westlake Park, St. Louis County, this year, indulged in egg-tossing contests between dips in an open-air swimming pool. Added attraction: presence of company personnel dressed as clowns, a delight to young and old alike.

• Carbide and Carbon Chemicals Co.'s Texas City personnel prefer a running summer festival to an annual one-day outing, make use of a 66-acre park thrown open to employees from April through October every year. Special Fourth of July observances are marked by a gigantic aerial show of traditional fireworks, draw close to 6,000 avid enthusiasts annually.

For the New York office crowd, Carbide takes over the Blind Brook Country Club for a day of bag races, band concerts, and square dancing.

• Charles Pfizer & Co., Inc., Brooklyn employees journey out en masse to Steeplechase Park, Coney Island, each year. All rides, eats and drinks are on the house, attendance is around 4,000, usually includes top executives and their families as well as lab people and operating personnel.

• American Cyanamid Co.'s Calco Div. has a yen for baseball in Bound Brook, tops off all picnics, athletic

choose the stainless that does the best job

No one stainless steel meets every set of service conditions. And you should not pay extra for special properties you don't need. You can economize too, by selecting alloys especially designed for your fabricating processes.

Crucible produces around thirty standard alloys and many other special types of REZISTAL stainless steel. To help you choose the proper grade, our field representatives are prepared to bring you the latest and most complete metallurgical and fabrication data available on the application of stainless steel. And our plate, sheet, strip, bar, wire and tube mills are equipped with the most completely automatic controls for rolling, annealing, heat treating, finishing and polishing to assure you of unvarying quality in every piece of Crucible REZISTAL.

For assistance in solving application problems and the finest quality in stainless steels, call Crucible.

Write for free copy of "Making the most of Stainless Steels in the Chemical Process Industries".

CRUCIBLE first name in special purpose steels

53 *years of* Fine *steelmaking*

STAINLESS STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

BUSINESS & INDUSTRY . . . . . .

events with watermelon all around. It's Canadian ally, North American Cyanamid, Ltd. has caught the craze, makes good use of the tons of water flowing through a canal near its plant at Niagara Falls, Ont. to fill an outsize swimming pool, open to company personnel and the public as well. A picnic park overlooks the pool, has become a popular and well-appreciated part of community life.

LEGAL . . . . . .

Antitrust Critique: To head up a study of the antitrust situation and see whether present laws need to be revised and modernized, Attorney General Herbert Brownell, Jr., has chosen Stanley N. Barnes and S. Chesterfield Oppenheim. Barnes is assistant attorney general in charge of the Justice Dept.'s antitrust division, and Oppenheim is professor of law at the University of Michigan. Brownell adds that other members of this committee will be named late next month.

•

Inflation Note: Higher fees are to be charged by the Food & Drug Administration for supervising the relabeling of imported products that fail to comply with provisions of the Food, Drug & Cosmetic Act. Effective Aug. 4, the owner or consignee of the goods must pay $4/hour for the services of the supervising officer and $5/hour for services of an analyst.

Spray Damage: A claim that 2,4-D herbicide damaged two clover seed crops to the extent of $5,140 has been upheld in U.S. District Court at Spokane, Wash. James R. Anderson testified that his clover had been hurt by 2,4-D sprayed by a West Air Co. crop-dusting plane over neighboring wheat fields in 1951, asked for $11,000 in damages.

•

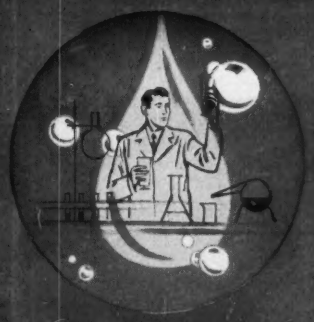
Cabot Collects: A ruling that a gas rate increase granted by the Oklahoma Corp. Commission is binding on all companies concerned, regardless of prior contracts, means a windfall of $387,282 for Cabot Carbon Co., Boston. U.S. District Judge Stephen S. Chandler in Oklahoma City ordered Phillips Petroleum to pay Cabot that sum, based on the amount of natural gas Cabot had delivered to Phillips since two rate increases were allowed by the commission.

•

Chemicals De-Taxed: Alabama farmers are expected to save $1.7 million/year on a newly made change in interpretation of the state's sales tax law. The 3% tax no longer will be charged on sale of feeds, insecticides, fungicides and similar materials. Farmers had long contended that they should not have to pay taxes on such products as long as there's an exemption on raw materials for manufacturers.

Summer Notwithstanding

DAVISON CHEMICAL CORP.'s $12 million triple superphosphate plant at Bartow, Fla. is beginning to shape up, scheduled for completion late this year. Goal is for an annual output of 200,000 tons. Facilities may soon be extended, moreover, to include uranium recovery. First building due up: a 325-ft. warehouse (*lower right*).



STEPAN CHEMICAL COMPANY

Announces NEW line of...

FATTY ALCOHOLS

and Fatty Alcohol Sulfates

The new line of Stepan higher fatty alcohols are now available for your trial. These new fatty alcohols from tallow, soya, fish, and linseed oils lend themselves to a wide range of applications including use as emollients, emulsifiers, absorption bases, intermediates, penetrants, thickeners, etc.

SULFATES of these fatty alcohols, because of their excellent detergent qualities combined with low defatting of the skin, will be of particular interest for use in shampoos, heavy-duty household detergents, and other detergents in either liquid or solid form. These Stepan fatty alcohol sulfates are available in a variety of forms as sodium salts or alkylolamine salts.

Tentative specifications for the Stepan primary Makanols (higher fatty alcohols) are given below. Chlorides and bromides of these primary Makanols are also available.

All Stepan Makanols can be obtained in commercial quantities based on semi-works unit production. Their derivatives can be obtained in laboratory or pilot plant quantities.

TENTATIVE SPECIFICATIONS

	% Myristyl Alcohol	% Cetyl Alcohol	% Stearyl Alcohol	% Oleyl Alcohol	% Linoleyl Alcohol	Iodine No.	Saponification Value	Titer
MAKANOL I	6	27	15	50	2	55	2	42
MAKANOL II	6	27	67	..	..	4	2	52

SUGGESTED USES

- Emollients
- Emulsifiers
- Oil Additives
- Chemical Intermediates
- Esters
- Plasticizers
- Mold Release Agents
- Rust Preventatives
- Textile Sizings
- Leather Stuffing
- Resins
- Metal Plating
- Wax Compounding
- Wetting Agents and Detergents
- Lubricants
- Emulsion Stabilizers
- Adherents in Cosmetics

Write for free Samples...

THE **STEPAN** **CHEMICAL CO.**

3250 So. Kedzie Avenue
Chicago 23, Illinois

FATTY ALCOHOLS • FATTY ALCOHOL SULFATES • BULK LIQUID DETERGENTS • SULFONATED OILS • SPECIALTY CHEMICALS

REP. REED: From the old-timer, a new deal.

Up for Overhaul

While extension of the excess profits tax (see Newsletter) was, perhaps, the biggest immediate tax move affecting chemical executives this week, a more important event over the long-range period was going almost unnoticed.

The item: a broad overhaul of the entire federal tax structure. At present, the tax structure is a jerry-built one in which new taxes have been piled atop old ones, causing many inequities and fuzzy spots.

This, undoubtedly, will bring tax reforms. And likely candidates for change will be several items that bulk large between the lines of chemical earning and balance sheets: depreciation write-offs, accumulation of reserves and surpluses, and extension of excise taxes to new fields.

Coincidentally, it is in front of Rep. Dan Reed—the man who most strenuously opposed extension of the excess profits tax—that the tax reform ideas are being sifted.

There is actually only one trouble with overhauling the structure. Each revision may mean that the government will take in less money. And the revenue needs of the government will not be going down correspondingly. This means that as Reed and his committee members hear testimony in favor of reforms, they won't forget to ask themselves the question: Where to make up the money lost?

Better Write-Offs: As of now, it's too early to forecast the committee's specific recommendations. Almost sure to be included, however, is a liberalization of depreciation rules. This may take the form of allowing companies to write off plant expenditures in five years, as has been proposed by Sen. Homer Capehart (*CW, July 18*). Or, it might tend more toward allowing firms to set aside replacement reserves in line with current, rather than historical, costs.

More Excises: Whether you call it a sales tax or an excise tax, it's being talked about seriously. A general sales tax has long been considered a political bugbear because it affects low income groups heavily.

But rather than impose a tax on all items—including basic necessities such as food and clothing—it may turn out that Congress will advocate an extension of 8-10% excises (now in effect on such items as automobiles and household appliances) to other broad ranges of manufactured materials. A basic decision still to come is whether such a manufacturer's excise would be levied at only one stage. A multistage levy (like that considered this year by the Texas state legislature) could put a premium on chemical company integration.

Co-op Taxes? Another possible source of new revenue is the extension of corporation income taxes to include farm co-operatives, industries operated by tax-exempt universities and other "nonprofit" institutions.

This, like a general sales tax, is a political toughy. The odds are against any such changes.

The International Revenue Code's

take an industry

...any industry

CLEANING COMPOUNDS
Industrial Cleaners
Household Specialties
Packaged Detergents

PULP and PAPER
Felt Scouring
Dispersing
Wetting Out

METALS
Surfactants in Coolants, Degreasing, Pickling & Plating

RUBBER
Latex-Stabilizer
Emulsifier
Dispersant

BIOCIDES
For Use in the Formulation of Insecticides, Fungicides and Herbicides.

LEATHER
Degreasing
Dyeing
Wetting Back

SYNTHETIC FIBERS
Detergent
Dye-Bath Assistant
Color Dispersion

COTTON
Boil-Offs
Fast Color Soaping
Desizing

WOOL
Scouring Agent
Dyeing Assistant
Carbonizing
Penetrant

CHANCES ARE THAT AN **IGEPAL®** TAKES A HAND

gdc ANTARA **IGEPALS**

CO-430 CO-710
CO-530 CO-730
CO-610 CO-850
CO-630 CO-880

IGEPALS are America's best-known nonionic surfactants. These versatile products are used in a wide variety of applications where detergent, emulsifying, wetting and dispersing properties are required. They are chemically stable in acids, alkalies and water of any hardness. The IGEPAL series offers a wide range of solubility in water, oils and solvents. IGEPALS are compatible with anionic or cationic products. Also, each IGEPAL is compatible with other members of the series, thereby offering the manufacturing chemist the opportunity to prepare his own nonionic formulation to meet his particular requirements.

gdc ANTARA gaf

ANTARA® CHEMICALS

DIVISION OF

GENERAL DYESTUFF CORPORATION

435 HUDSON STREET • NEW YORK 4, NEW YORK

BRANCH OFFICES: Providence • Philadelphia • Charlotte, N. C. • Chicago • Portland, Ore. • San Francisco

IN CANADA: Chemical Developments of Canada Limited, Montreal

Section 102 is also due for revision. This section covers accumulation of surpluses by corporations. A main chemical bugaboo has been the fact that Section 102 allows unpenalized temporary accumulation of surplus only if the company has firm and immediate plans for spending. Modification is clearly in prospect.

On the other hand, the section won't be dropped entirely. Its penalties generally have been assessed against closely held companies whose funds are kept in surplus to skirt paying any taxes. Congressmen and Treasury officials both feel that a penalty should be available for flagrant violators.

Tax Timing: The committee is not planning to make recommendations in time for the present session of Congress to act on them. Too, since Ways & Means Chairman Reed is angry at the Administration, it's doubtful that he will pay a great deal of attention to Treasury officials on tax reforms.

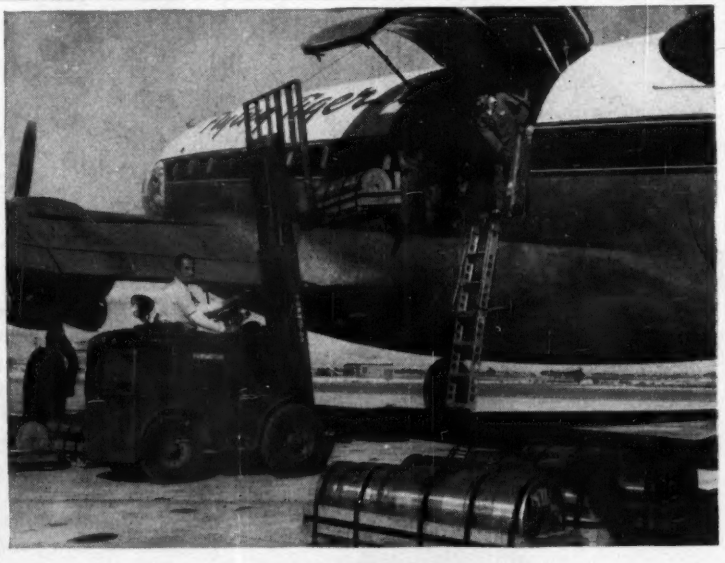
This raises the possibility that Congress will have two sets of ideas on tax reforms to decide upon. And this means business will have to wait until the closing days of next year's session to learn the kind of a tax structure it will have to live with.

Milano Musings

Conscious of the budding promise of Italy's chemical industry (*CW, June 13*), Fair of Milan officials sparked this year's exhibits with a series of well-timed pep-talks. Declared purpose: to examine and discuss what's already been done by Italian chemical manufacturers; to map out problems that beleaguer them; to attempt to chart a course ahead.

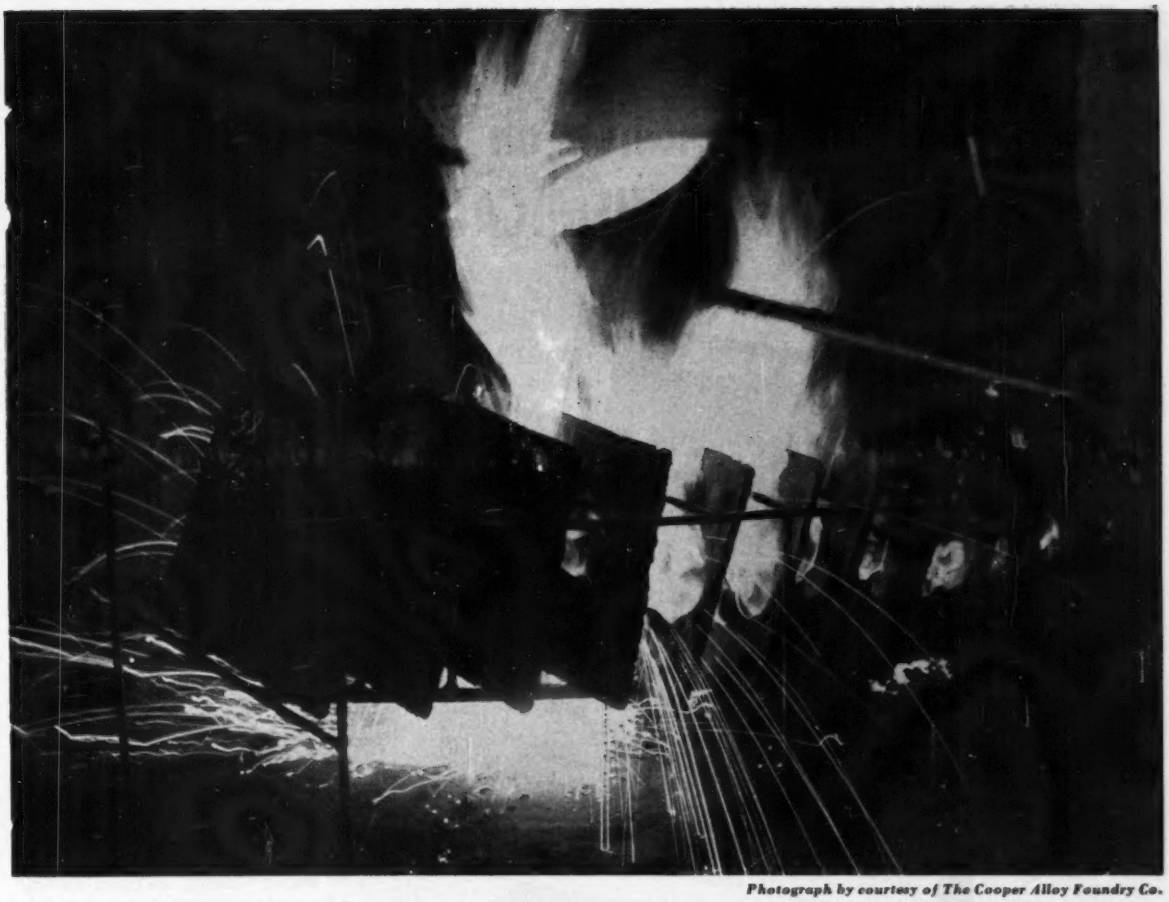
Textiles, plastics and pharmaceuticals came in for a lion's share of attention. Speakers agreed that:

- The Italian chemical industry enjoys a decided advantage (compared with that of other European countries) in the production of synthetic fibers. It has the raw materials—handy and inexpensive—and "by acting with timeliness can realize vast economic superiority — both at home and abroad."
- Plastics production in Italy is booming. Almost every product is now available, only a "more concentrated effort to educate rural consumers to use a wider range of plastic items remains to be tackled." From polyvinyl flooring to synthetic resin adhesives, enormous gains production-wise have been made in the past year.
- Pharmaceuticals have been the



Special Speedy Service

WHEN THE GOVERNMENT stamps "urgent" on its call for titanium, Titanium Metals Corp. of America responds. Special feature of the rapid delivery service: shipment by air freight in 1,500-lb. ingots to the point of call. This load—to Watervliet, N.Y., for fabrication into sheet, wire, bar and forgings—is close to a half day's production at Titanium Metals' Henderson, Nev., plant, now turning out over 4½ tons/day, and gearing up to a 10-ton rate.



Photograph by courtesy of The Cooper Alloy Foundry Co.

Here's a close-up view of one of the most closely-guarded industrial secrets in years: Shell Molding. This picture shows the pouring operation at The Cooper Alloy Foundry Co., Hillside, N. J.

Can HCHO Remold The Foundry?

The most exciting foundry technology news in many years has been the recent announcement of a revolutionary new process called "Shell Molding." Like so many ideas that have proved revolutionary, "Shell Molding" is, basically, a simple idea.

The key to this new process is a thin mold of sand called a "shell mold." Molten metal is poured into this mold as shown in the picture above. The binder used to hold this sand together is phenolic resin. By adding just five percent phenolic resin to sand, this revolutionary new process became a reality.

As a supplier of HCHO used to prepare phenolic resins, Spencer Chemical Company has been intensely interested in this new foundry development. Formaldehyde . . . phenolic resins . . . shell molding. It's one more example of the limitless frontiers of chemistry; an inventive triumph so revolutionary that it may not only remold the foundry, but may actually remold an industrial way of life.

SPENCER PRODUCTS: Anhydrous Ammonia • Refrigeration Grade Ammonia • Aqua Ammonia • Methanol Formaldehyde • "Mr. N" Ammonium Nitrate Fertilizer SPENSOL (Spencer Nitrogen Solutions) • 83% Ammonium Nitrate Solution • FREZALL (Spencer Dry Ice) Liquid Carbon Dioxide.

SPENCER

America's Growing Name In Chemicals

Executive and Sales Offices, Dwight Bldg., Kansas City, Mo. Works: Pittsburg, Kan., Henderson, Ky., Chicago, Ill., Charlestown, Ind., and Vicksburg, Miss. (Under construction.)

B&I. . . . . .

biggest headache to Italian producers. Government legislation still makes protection by patent impossible; distribution channels are badly clogged; home sources of certain basic raw materials are nonexistent; foreign competition is on the rise. Yet an ever-hungry market for vitamins, sulfa drugs and antibiotics has kept Italian production afloat, has given time to technical and research staffs to grab a breath and catch hold.

Proof of Italy's ground-gaining in pharmaceuticals: two new penicillin and streptomycin plants are all set to roll soon, will hike up home output of antibiotics to exceed national needs. What's left over, officials say, will go to those countries in Africa and Asia "bereft of their own pharmaceutical industries."

• Today's Italian chemical plants bring in over 21% of the national revenue—a tidy chunk. Yet while imports last year jumped 6.5% and exports sank 2.2%, figures alone don't really tell the story. Sulfuric acid production (a barometer of progress) is on the upgrade; nitrogen-containing fertilizers (3 new plants coming onstream this year) are easily obtainable, getting cheaper. Though caustic soda and sodium carbonate production fell back in '52 [due to a world-wide textile slump], calcium carbide and benzene output is more than taking up the slack. And methane-based chemicals—the pride and joy of Italian chemical manufacturers—are burgeoning—e.g., ammonia, methanol and acetylene.

Next target: boosting nylon output (up 30% in '52) and plastics production—both potential comers in export and internal markets.

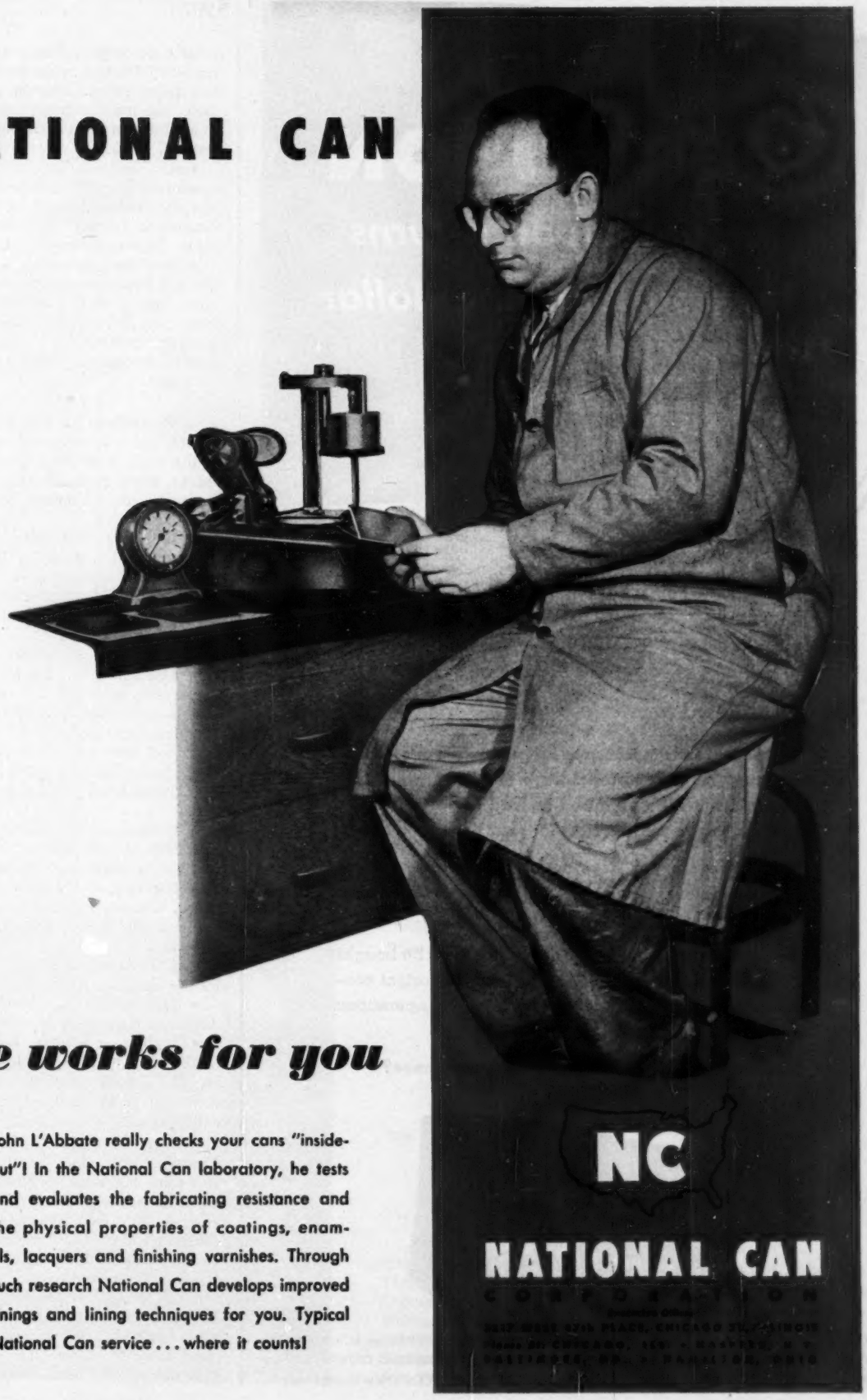
LABOR. . . . . .

Masked Outlays: Increasing wages a few cents an hour may sound like chicken feed, but for a company that has thousands of employees, such an increase can absorb a million dollars or more in the course of a year. Latest example is the case of Dow Chemical, which last week signed long-term contracts with sizable wage rises at its two main plants.

• The 5,700 hourly paid employees represented by District 50, United Mine Workers, at Midland, Mich., will receive benefits expected to add about $1,750,000 to Dow's labor costs during the first year of the new 33-month agreement. Boosts are: 5¢/ hour now, additional 5¢ increases next July 4 and again on July 4, '55. The 16¢ cost-of-living bonus was frozen into new base rates, and there's a new es-

at

NATIONAL CAN



he works for you

John L'Abbate really checks your cans "inside-out"! In the National Can laboratory, he tests and evaluates the fabricating resistance and the physical properties of coatings, enamels, lacquers and finishing varnishes. Through such research National Can develops improved linings and lining techniques for you. Typical National Can service . . . where it counts!

NC

NATIONAL CAN

CORPORATION

calator clause providing a 1¢ increase for every 1% rise in the new consumer's price index. Pension payments, including social security, are now up to a minimum of $140/month after 25 years of service.

• At Freeport, Tex., Dow's 2,300 employees who are members of Local 564, International Union of Operating Engineers (AFL), will receive 5% wage increases ranging from 7 to 12¢/hour and averaging 9.8¢ under the new two-year contract. Other benefits: funeral-leave pay, higher sick-leave pay, and a 1¢ hike in differential pay for the third shift. Added annual cost to the company will be more than $500,000.

•

Few Exceptions: That those wage increases are in keeping with the trends of the times is demonstrated by these recent wage increases negotiated by International Chemical Workers Union:

• 16¢/hour — Spencer Chemical Co., Joplin, Mo., including 10¢ across-the-board, classification adjustments, higher shift differentials, double-and-a-half time for holidays worked, more liberal vacation plan.

• 15¢/hour — Monsanto Chemical Co., Monsanto, Ill., for about 1,700 employees, with shift workers receiving an additional 5¢ increase; Interchemical Corp., Cincinnati, on a two-year pact with wage reopener clause.

• 11¢ to 17¢/hour—Johns-Manville, Port Union, Ont., plus full pay for jury duty.

• 12½¢/hour — Reynolds Plastic, Inc., Detroit, with seven paid holidays and a more generous vacation clause.

• 10¢/hour — Liquid Carbonic Corp., Cincinnati, plus an additional 2¢/hour rise in shift differential rates.

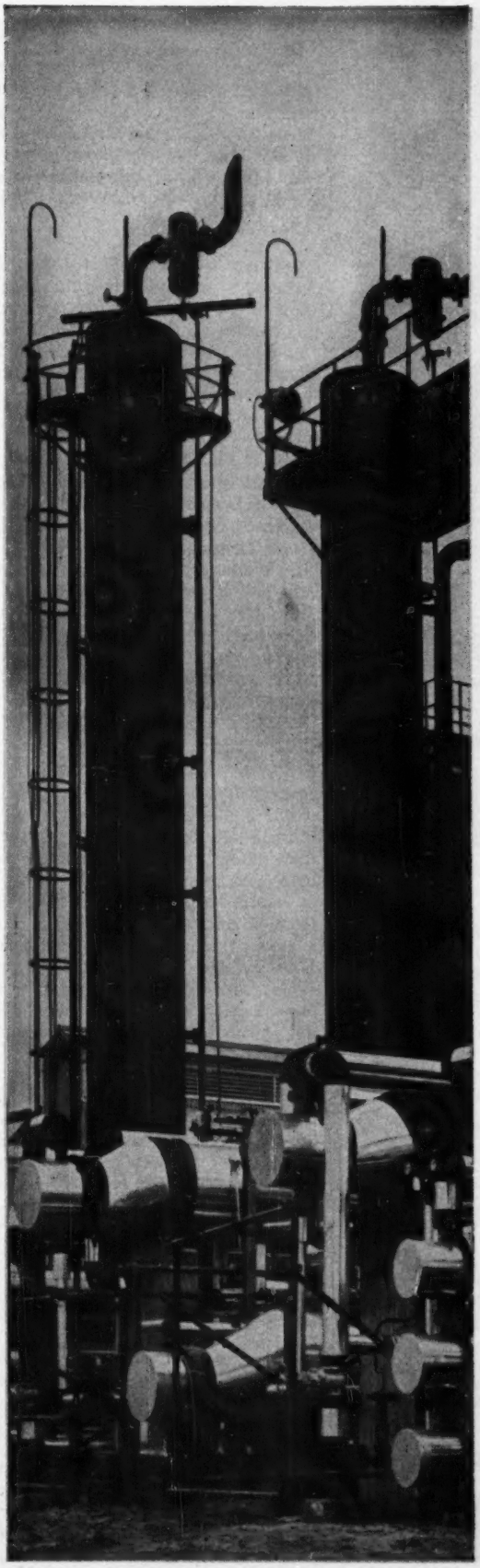
• 9¢/hour—National Cylinder Gas Co., Cincinnati; and Air Reduction Pacific Co., Los Angeles.

• 7¢/hour—Calco Chemical Div., American Cyanamid, Marietta, O.

• 2¢/hour — Lederle Laboratories Div., American Cyanamid, Pearl River, N.Y., with classification adjustments of 5 to 7¢/hour for certain employees.

•

Transparencies: Significant increases also came last week for glass and cellophane workers. Some 22,000 employees of Libbey-Owens-Ford and Pittsburgh Plate Glass are covered by an agreement with the CIO Federation of Glass, Ceramic & Silica Sand Workers; maintenance employees will get an 8¢ rise and production workers, who received a 4¢ annual improvement increase earlier this year, will gain another 1¢/hour. Hikes ranging



Natural gas, carbon dioxide and steam are reacted here to form synthesis gas for the catalytic units.

Raw material supply assures Texas Eastman production of important industrial chemicals

Ethyl alcohol, isobutyl alcohol, 2-ethylhexyl alcohol, isobutyraldehyde, n-butyraldehyde form nucleus of versatile group of basic chemicals.

Completed last year, the Texas Eastman plant at Longview, Texas draws upon the huge natural gas and propane reserves of the East Texas oil field for its synthesis operations utilizing thermal crackers and high pressure catalytic reactors.

This highly favorable raw material position combined with new and unusually flexible methods of processing make Eastman an economical and dependable chemical supplier. Products of the Texas plant are used in the manufacture of paints and lacquers, industrial chemicals, drugs, plastics, fibers, and resins.

If you are now using, or contemplate using, any of the five chemicals listed above or their related compounds, call your nearest Eastman sales representative for further details or write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE

Sales representative for:
TEXAS EASTMAN COMPANY,
TENNESSEE EASTMAN COMPANY,
divisions of EASTMAN KODAK COMPANY

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

B & I . . . . . .

from 5 to 8¢/hour for about 1,000 employees in Du Pont's Old Hickory cellophane works near Nashville, Tenn., will bring the hiring rate there to $1.43 and the top operating rate to $2.14/hour. The latter employees are members of the Textile Workers Union (CIO).

•

And Stenos Too?: Industry can also expect an inclination toward unionization on the part of "white-collar workers," according to Research Institute of America. It warns that companies should set up some kind of formal procedure on grievances to meet the needs of this "rapidly growing group."

•

1 Off, 1 On: A strike by 1,800 members of District 50, United Mine Workers, has been settled with a 4½¢/hour increase at two plants of Atlas Powder Co. in Tamaqua, Pa.; but the AFL Sulfite Workers and Paper Makers are still out at the two paper plants in Elizabeth, La. Latest incident of violence in this strike, now in its 11th month, came when two nonunion workers were shot and wounded from ambush.

FOREIGN . . . . .

Insecticides/South Africa: An official warning has gone out in Johannesburg, South Africa, warning farmers that unless modern insecticides are used with great care, they are likely to cause harmful results. Says the Dept. of Agriculture: "There has been a growing toll of sickness and death from careless use of synthetic organic products, heavy application in some locales has even rendered the soil incapable of growing certain crops."

•

Polyethylene/Great Britain: Work has started at Stevenage, Hertfordshire, England, on headquarter buildings for British Visqueen, the company formed jointly by Imperial Chemical Industries and the Visking Corp., Chicago, to manufacture polyethylene in Britain. Authorized capital: $672,000 in $2.80 shares, of which two-thirds will be held by ICI and one-third by Visking.

•

Pharmaceuticals/Canada: Geigy (Canada) Ltd. has opened a new division, Geigy Pharmaceuticals, with offices in Montreal.

•

Vinyl Plastics/Mexico: Monsanto Chemical Co. has added a second Mexican plant, begun producing vinyl plastic the first of July. Since Monsanto's first plunge—construction of a

B & I . . . . . .

polystyrene plant in Mexico City—two other U.S. chemical companies have entered the plastics business south of the border: Bakelite has put in a plant at Monterrey; U.S. Celanese Corp. has set up a plant called Claracel, S.A.

•

Atomic Energy Materials/India: The government of India has extended its control under the Atomic Energy Act of 1948 to radium, zirconium, graphite, lithium, and deuterium. No person may now deal in any of these items without official license.

•

Explosives/India: The Indian government and Imperial Chemical Industries, Ltd. have come to terms on an agreement to establish an explosives factory in India. Cost: around £2 million.

KEY CHANGES . . .

Ross M. Hastie, to divisional vice-president, Hilton-Davis Chemical, Cincinnati.

Eric J. Hewitt, to vice-president, Evans Research and Development Corp., New York.

James H. Curtis, to assistant to president, The Lummus Company, New York.

James L. Naylor, to dyestuff department manager, Calco Chemical Div., American Cyanamid, Bound Brook, N.J.

R. A. Hoekelman, to general manager, plastics and resins division, American Cyanamid, New York.

George H. Hotte, to synthetic fiber sales manager, National Aniline Div., Allied Chemical, New York.

Thomas D. Johnson, Jr., to Freon sales manager, Organic Chemicals Dept., Du Pont, Wilmington, Del.

Ray Thomas, to executive vice-president, Vimasco Corp., Charleston, W. Va.

Sydney Nashner, to assistant to president, Sherritt Gordon Mines, Toronto, Ont.

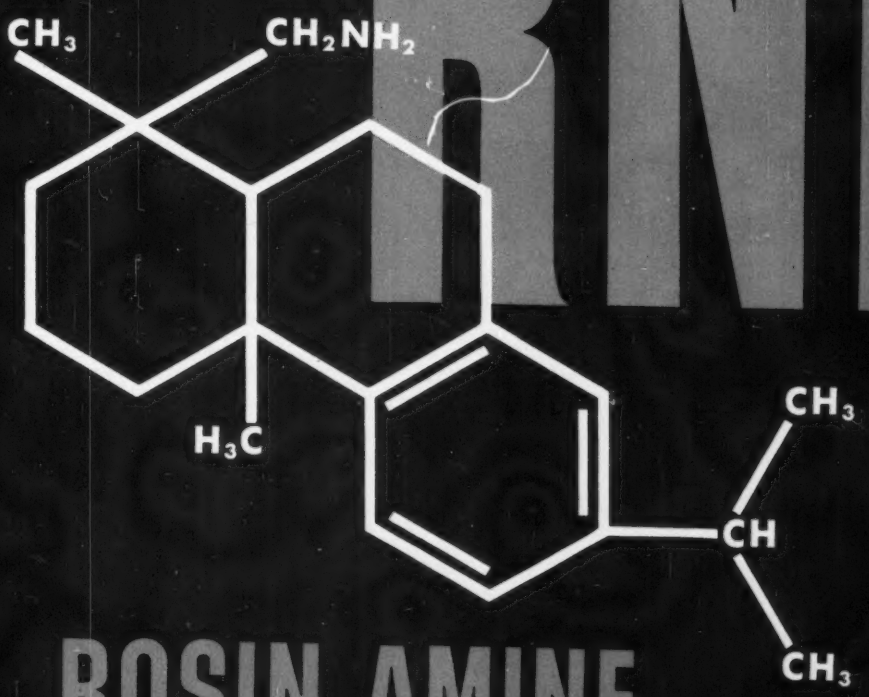
Wilbur A. Lazier, to vice-president and technical director, Sprague Electric, North Adams, Mass.

L. J. Brady, to director of research, Ferroxcube Corp. of America, Saugerties, N.Y.

D. L. Richards, to market research and development manager, Carlisle Chemical Works, Reading, O.

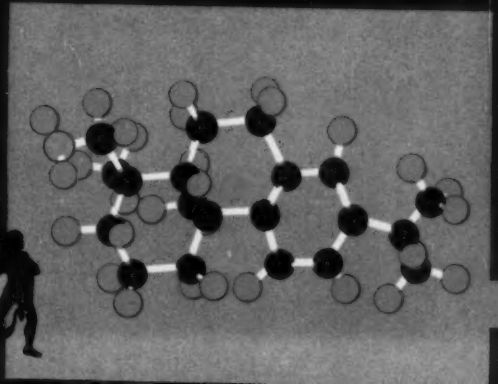
STARTING POINT FOR NEW FAR REACHING SYNTHESES

RNH_2



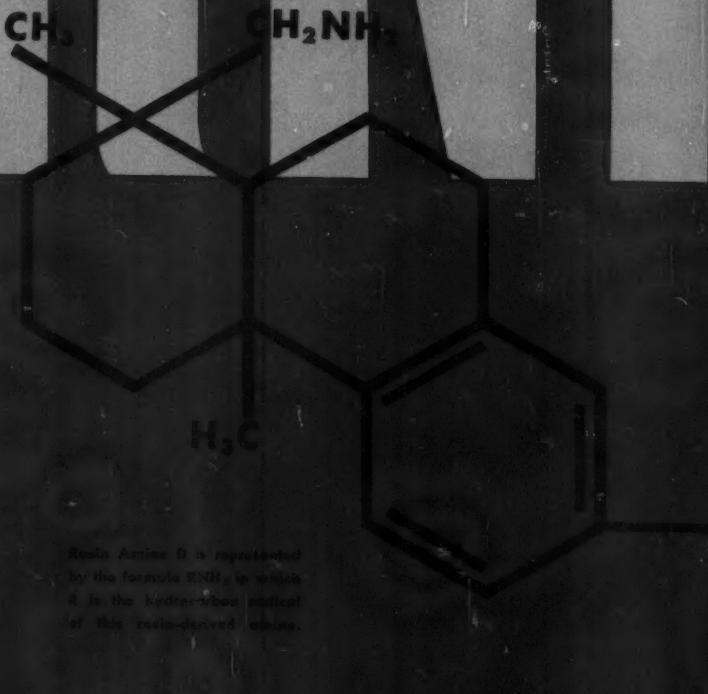
ROSIN AMINE

...WHAT DOES IT MEAN TO YOU?



HERCULES POWDER COMPANY
INCORPORATED

RNH$_2$



Rosin Amine D is represented by the formula RNH$_2$ in which R is the hydrocarbon radical of the rosin-derived amine.

SOME OF THE THINGS THAT ROSIN AMINE D OR ITS DERIVATIVES CAN DO

IMPROVE ADHESION of asphalts to wet aggregates and of conventional asphalt paints cements to damp surfaces.

CONTROL BIOLOGICAL GROWTH, effective against fresh water algae, bacterial, fungi, aquatic animals, diatoms, etc.

INHIBIT CORROSION, both electrolytic and chemical, of ferrous and nonferrous metal surfaces. Certain derivatives are effective in acidic aqueous systems, especially hydrochloric acid.

EMULSIFY oils, waxes, and asphalts, giving products stable in acidic media. Also effective in emulsifying vinyl polymerization systems.

ADSORB selectively to siliceous surfaces, as negatives in flotation of coal and ores and minerals.

STABILIZE the viscosity of asphalts (esp. especially where petroleum [illegible] Also serve as pigment-wetting and pigment-dispersing agents in both cements and printing inks.

PLASTICIZE synthetic and natural rubber, in which service rosin amines act as accelerators.

DO THESE KNOWN REACTIONS OF ROSIN AMINE D SUGGEST OTHERS TO YOU?

Reaction With Acids To Form Salts

Hercules Rosin Amine D reacts with acids and other substances containing a group which functions as an acid (such as a phenolic hydroxy group) to form salts, example:

$$RNH_2 + CH_3COOH \longrightarrow RNH_2 \cdot CH_3COOH$$

Typical acids which may be used include hydrochloric, boric, acetic, stearic, adipic, benzoic, naphthenic, various sulfonic acids, and acidic-reacting phenols such as pentachlorophenol.

Reaction With Acids To Form Amides

Some Rosin Amine D salts can be heated to form the substituted amides, example: the heating of RADA (Rosin Amine D Acetate) to a relatively high temperature gives a substituted acetamide.

$$RNH_2 \cdot CH_3COOH \xrightarrow{\text{heat}} CH_3CONHR + H_2O$$

Reaction With Ethylene and Propylene Oxides To Form Condensates

Rosin Amine D reacts with ethylene oxide to form condensates, example: the polyethylene glycol ethers of the diethanol derivative.

$$RNH_2 + \underset{\diagdown O \diagup}{CH_2CH_2} \longrightarrow RN\text{-}(CH_2CH_2O)_nCH_2CH_2OH)_2$$

Other oxides such as propylene oxide and glycidol (2,3-epoxy-1-propanol), or mixtures of oxides may be used in place of ethylene oxide to form adducts.

Reaction With Carbon Disulfide To Form A Dithiocarbamate Or Thiourea

Rosin Amine D reacts with carbon disulfide to form the Rosin Amine D salt of an N-substituted dithiocarbamic acid:

$$2RNH_2 + CS_2 \longrightarrow RNHCSSHNH_2R$$

Heating the above salt yields an N,N'-substituted thiourea:

$$RNHCSSHNH_2R \xrightarrow{\text{heat}} RNHCSHNR + H_2S$$

Reaction With Metal Salts To Form Metal Complexes

Complex metal salts are formed by reacting Hercules Rosin Amine D with metal salts. Generally, two moles of Rosin Amine D and one mole of the metal salt are involved in this type of reaction, example:

$$2RNH_2 + (CH_3COO)_2Cu \longrightarrow 2RNH_2 \cdot (CH_3COO)_2Cu$$

Complex salts of copper, zinc, silver, nickel, manganese, cobalt, mercury, calcium, aluminum, iron, and chromium have been prepared. Usually the acetate of the metal is used, but other salts including the sulfate, chloride, and nitrate also react. The resulting products are resinous in character and are soluble in organic solvents.

Reaction With Phosgene To Form Rosin Isocyanate

Rosin Amine D hydrochloride reacts with phosgene to yield rosin isocyanate:

$$RNH_2 \cdot HCl + COCl_2 \longrightarrow RNCO + 3HCl$$

This isocyanate will react with a variety of compounds containing active hydrogens.

Reaction With Acrylonitrile To Form A Diamine Or An Amino Acid

Rosin Amine D reacts readily with acrylonitrile to form an adduct:

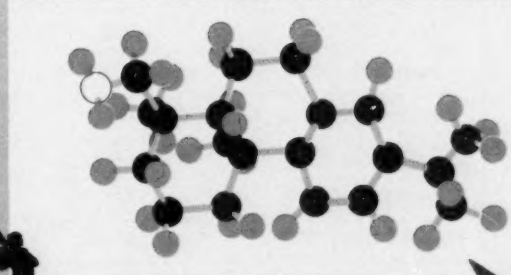
$$RNH_2 + CH_2{=}CHCN \longrightarrow RNHCH_2CH_2CN$$

which is readily hydrogenated to a diamine:

$$RNHCH_2CH_2CN + 2H_2 \longrightarrow RNHCH_2CH_2CH_2NH_2$$

or is readily hydrolized to form an amino acid:

$$RNHCH_2CH_2CN + 2H_2O \longrightarrow RNHCH_2CH_2COOH + NH_3$$



HERCULES

DO THESE KNOWN USES SUGGEST NEW POTENTIAL FIELDS FOR YOU?

ASPHALT
- Highway Construction Cut-Backs
- Mastic Cements

BIOLOGICAL GROWTH CONTROL
- Algaecides
- Bactericides
- Fungicides
- Molluscacides
- Cordage Preservatives
- Disinfectants & Sanitizers
- Fabric Preservatives
- Irrigation-Canal Algaecides
- Paint Mildewcides
- Protein & Carbohydrate Preservatives
- Wood Preservatives

CORROSION INHIBITORS
- Atmospheric-Type Rusting
- Protection of Copper against Hydrochloric Acid
- Compressed Natural Gas Pipelines
- Crude Oil Wells
- Inhibitors for Hydrochloric Acid
  - Industrial Cleaning
  - Well Acidizing
- Petroleum-Refining Equipment
- Secondary Recovery

EMULSIFIERS
- Oil & Wax Emulsifiers
- Emulsifiers for Chemical Processes

FLOTATION AGENTS

INKS
- Ceramic Inks
- Printing Inks

PAINTS & VARNISHES
- Pigment Flushing
- Varnish Gel Control

RUBBER
- Reclaiming
- Compounding
- Adhesives
- Emulsion Polymerization

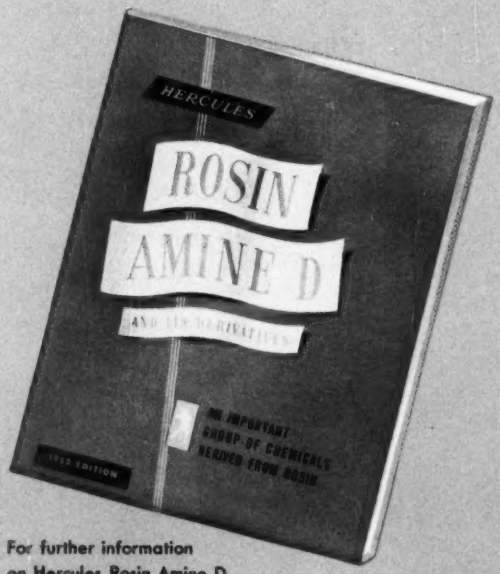
TEXTILE
- Bonding Aid for Cellulosics
- Viscose Rayon Manufacturing

HERCULES ROSIN AMINE D PRODUCTS COMMERCIALLY AVAILABLE

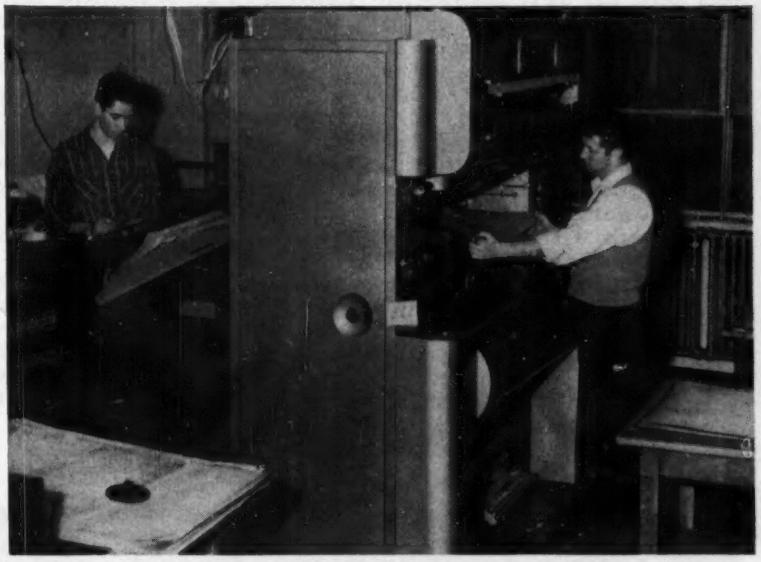
PRODUCT	CHEMICAL NATURE
Rosin Amine D	Primary amine; oil-soluble
RADA (Rosin Amine D Acetate)	Water-soluble acetate salt
Rosin Amine D Naphthenate	Oil-soluble salt
Rosin Amine D Stearate	Oil-soluble salt
Rosin Nitrile D	Primary nitrile; oil-soluble
Polyrad®	Ethylene oxide derivatives
Polyrad 0100	Oil-soluble
Polyrad 0200	Oil-soluble
Polyrad 0500	Acid-soluble
Polyrad 0515	Acid-soluble
Polyrad 0515A	Acid-soluble
Polyrad 1100	Water-soluble
Polyrad 1110	Water-soluble
Polyrad 1110A	Water-soluble
Polyrad 2000	Water-soluble

The facts stated and recommendations made for Rosin Amine D and its derivatives are based on Hercules research and the research of others, and are believed to be accurate.

400-469 NA53-2



For further information on Hercules Rosin Amine D and its derivatives, send for this book.



OFFICE COPIER: For facile facsimiles, chemicals.

Matter of Repetition

Duplicating office forms and copying documents has developed into a multimillion-dollar market for chemicals.

Silver halides, ferric oxalates, iron cyanides, and diazo dyes are the principally used compounds, but the variety in copying systems demands a number of others, too.

There's room also for specialties like transparentizers and sealers, to render documents more readily reproducible.

Out of the drafting room and into the office, from blueprinting to a host of systems that offer a broad variation in cost, quality and flexibility. That's behind the rapid growth in facsimile processes.

Modern business's dependency on duplicators has even created opportunities for related specialties—the patent issued this week to C-T-S Process Co. (Philadelphia) on its transparentizing and sealing compounds (which make a variety of papers more easily copied) is illustrative.

Lines to Letters: Partly responsible for the wide acceptance of chemical copying systems (as differentiated from systems requiring a specially made "master") has been their flexibility. There's a process for reproducing nearly anything—engineering drawings, letters, business forms, etc. And there is a wide variation in quality of copy, cost, and sort of material the process will duplicate.

Century-old blueprinting still grabs a major share of the copying market. Last year 13,000 tons of blueprint stock were coated, enough to make 188 million sq. yds, and requiring well over 2 million lbs. of coating chemicals.

But blueprinting, despite its continuing growth (up 2% over comparable period in first quarter of '53) is restricted almost entirely to engineering drawing reproduction. So it has lost out, volumewise, to direct-line reproduction (diazo or white printing). With an estimated half of production going to copying machines in offices, 27,000 tons of direct line papers—390 million sq. yds.—were turned out last year, requiring roughly 800,000 lbs. of chemicals. And diazo first quarter sales are up 19%.

Basis for a raft of copying processes are photographic papers. An estimate from an industry leader puts the value of silver halide papers for duplicating at approximately $20 million—from this standpoint, perhaps, they rate as the number one system.

Skip the Baths: The most firmly established photocopying systems use photographic techniques—cameras, and developing and fixing baths. A number of processes have modified the procedure so that the copying can be carried out in daylight. The most recent developments, however, tend to eliminate the bulky, messy developing and fixing.

Typical of these is the Remington Rand Transcopy system. Offered in this country little more than a year, it uses a silver halide paper to make the initial image of the document; it's fed into a small unit that contains a combination developer and fixing bath. Along with the exposed sheet, another sheet, face-to-face with the first, is put in the unit. The latent image is developed, and in a manner Remington Rand won't detail (it's a process worked out by Gavaert in Europe) the positive image is transferred to the second sheet.

American Photocopy has a rather similar process, and Eastman Kodak's Autopositive paper gives the positive image, although it needs ordinary developing. Kodak has a transfer process of its own, a dye transfer, which it calls Varifax.

Wax Facs: A couple of other copying processes utilizing uncommon techniques are Minnesota Mining & Manufacturing Co.'s Thermofax, and Haloid Co.'s Xerox.

The 3M process uses a heat sensitive paper—waxlike, opaque chemical is sandwiched between a black sheet and a transparent layer. In a special unit, infrared heat is passed through the original onto the special sheet; the black areas of the original best transmit the heat, and in so doing, melt the white opaque layer, making it transparent, so that the dark backing sheet shows through. Copies cost about a nickel, require no further treatment.

Xerography is suited for producing single copies, and for making masters to be used on offset duplicators. It makes use of a selenium plate, which is electrostatically charged, then exposed to an image of the material to be copied. The exposed plate is dusted with a powder consisting of a dark toner (apparently including a heat-setting resin) and fine glass beads. The dust clings to the areas where the shadow of the image impinged, and can be transferred to paper or offset master in a second step. The final step is fusing the image on the paper by heat. The selenium plate, cleaned off, can be reused.

Drafter's Special: Blueprinting, long used for copying machine and engineering drawings, has been improved (to give greater contrast) by treating the paper stock with a solution of colloidal silica—Monsanto's Mertone process, licensed from H.

P. Andrews Paper Co. The silica gives a greater surface area for the light sensitive chemicals—potassium ferro- and ferricyanides, ferric ammonium oxalate, etc—to cling to. The resulting increased concentration sharpens the final image.

There are two disadvantages to blueprinting that the diazo types appear to have licked: the wet rinsing, and the negative image. Not too limiting for drawings, they are factors in the suitability for office copying.

Two types of diazo reproduction are in wide use in this country. One, typified by the Ozalid (Ozalid Div., General Aniline and Film Corp.) system, employs a diazo compound, organic acids, and a coupling compound. Exposure to light destroys the diazo; the portion blocked out by lines on the original is retained. When the exposed paper is treated with ammonia fumes, the acids are neutralized, and coupling takes place. The ammonia source is a simple water solution, vaporized on a heated plate.

The moist processes, of which the Bruning system (Charles Bruning Co. Inc., New York) is an example, require paper treated with diazo compounds, as well as stabilizers. After the latent image has been formed, the paper is passed over a moist roller coated with a coupling compound, which unites with the undestroyed diazo.

The two processes compete; the drawback to the ammonia system is the need for removal of the fumes, and the moist system, obviously, doesn't make a completely dry copy.

There are some 55 producers of blueprint and direct line papers. Among the larger coaters of the papers are firms making them for their own machines—producing the chemicals and applying them to the sheets. They guard production figures closely. Nevertheless, independent makers of light sensitive diazos produce about half a million dollars worth a year, about two-thirds for the ammonia processes, the rest for the moist systems.

The diazos for ammonia setups sell for about $4/lb.; for the moist, about $9/lb., although there is some variation. A square yard of direct-line paper demands only about .2-.3 gram of light sensitive compound, but there are other chemicals—stabilizers, acids—which boost the coating weight. Blueprint papers can take a coating as high as 5 gms./sq. yd.

Limitations: There are several applications in which the direct-line machines, as offered to offices, have limitations. Sometimes the paper stock on which the original is made is not transparent; sometimes it's printed on both sides; and bulky material—like bound books—won't go through the machines. But these problems can be licked by special techniques—and in one case, at least, it's a sort of selling job.

This "selling" involves getting firms to use paper stocks that are translucent, and which make letters and charts that can be easily copied. An ideal paper would have the translucency of drafter's vellum—but copiers will settle for a well-made sulfite bond.

This need for translucent paper has opened the field for transparentizing compounds, like the described C-T-S material. It is a mineral oil, mixed with carbon tetrachloride and organic solvents. The sealer, to keep the treated paper from staining anything else, is a wax-in-solvents compound, though a new one will make use of neoprene.

There are a number of transparentizers on the market; some employ resin rather than mineral oil to make the papers more translucent. Most copying companies offer them, though most hope for the day when they won't be necessary. Right now, however, transparentizers are a vital part of duplicating.

All in all, firms in the copying system business are among the few to look with pleasure on the increasing use of business forms. It all makes for more sales, and as one company happily puts it, "Our business isn't duplicating, it's multiplying."

KOONCE AND FULENWIDER: "Concours d'Elegance" . . . the road to profits.

Starting with the Finish

Trying anything once is the formula for success of a man-and-wife team of Florida specialty makers. With their Easy Glitter Wax Co. (West Palm Beach) they've tackled the competitive automobile wax field. And now they are going after the "carriage trade" with startling good fortune.

This is the fourth year for Easy Glitter. With sales clipping along at a fast-rising pace, comfortably over a million cases should move this year, owners Fulenwider predict. That's a pretty amazing growth: in 1950, when Hal Fulenwider and his wife Marion started their plant, sales were only a "few" thousand cases. About 75,000 cases were sold in '51, and then last year sales shot to 400,000.

It's all pleasantly encouraging to the couple. Hal had operated automobile service stations around Savannah, Ga., for several years, became intrigued with the opportunities he spotted

YOU SAVE MONEY BY SAVING WEIGHT...

with NORRIS-THERMADOR CYLINDERS *for gases, liquids and chemicals*

Design improvements and refinements in production technique have resulted in cylinders of lighter weight and better performance for many Norris-Thermador customers. Why not investigate our facilities to design and produce seamless or welded cold drawn pressure containers to your specific requirements?

We will submit preliminary proposals in answer to detailed requests. Write for descriptive brochures on the manufacture of cylinders and Norris-Thermador facilities.

NORRIS-THERMADOR CORPORATION

5215 South Boyle Avenue • Los Angeles 58, California

The West's largest and most experienced producer of drawn metal products:

Pressure Cylinders
Plumbing Fixtures
Cookware
Ordnance Equipment
Auto Parts
Electrical Appliances

LIGHTEST WEIGHT WITH GREATEST STRENGTH THROUGH UNIFORM PRODUCTION

in car waxes. He toyed for close to 15 years with formulations, finally launched Easy Glitter.

Two-Dollar Shine: And the formulation Fulenwider came up with doesn't sell cheaply. Easy Glitter was retailed for $2 in half-pound cans and $3.75 in pound cans—considerably above most competitive products.

But Fulenwider has recently boldly introduced an even higher-priced product, Classic Car wax, priced at $5/pound. It's being marketed by a separate, affiliated company, Classic Car Products, Ltd. Just how this wax will be sold—through dealers or directly to auto owners—will be determined by the result of a try-out campaign in publications such as the *New Yorker*.

The promotion is deliberately built around "snob appeal,"* is aimed at "discriminating owners of fine American and imported cars." To help such auto fans give their cars that "concours d'elegance look", Classic is offering at $9.50, a kit that includes car wash, car wax, and "Classic Car Leather Care", as well as polishing cloths. Classic is catching on, with owners of expensive cars apparently feeling that pride of ownership demands that they indulge in a superior product.

Both Easy Glitter and Classic are formulations of carnauba wax with diatomaceous earth and other additives —certainly nothing startling. Despite the high retail prices of these products, the Fulenwiders claim they're no more expensive to use than other waxes, as a half lb. of wax will polish four cars.

Coop Selling: Part of the success of Easy Glitter, aside from whatever merit it has, lies in the marketing plan the couple worked out. Because they didn't have capital to employ a large number of salesmen they enlisted services of manufacturers' agents, now have over 100 of the representatives who cooperate both in selling and in advertising.

One of the biggest markets for Easy Glitter is in the New York area where these agents and Fulenwider split the cost of full-page newspaper advertising. Fully 50% of Easy Glitter distribution is in the Northeast—New York, Pennsylvania, New Jersey and New England—although Fulenwider now claims distribution in 33 states.

In four years' time Easy Glitter has outgrown its original 25 ft. x 50 ft. manufacturing area, which was recently quadrupled. The Fulenwiders, with Sales Manager J. D. Koonce, have a total office and manufacturing force of 14.

Hal Fulenwider spends much of his time visiting sales agents, and dropping in on sport cars shows—demonstrations are his most effective sales boosters. Mrs. Fulenwider supervises wax mixing, handles the office chores, as well. She put the feminine touch on many things: every order is acknowledged with a personal letter—and that sometimes means 200 letters a day.

Native southerners, the Fulenwiders like their Florida location. They've found no serious disadvantage in being nearly 1,300 miles from the New York market and supply area. They ship their products north in their own truck, haul raw material back on the long return trip. But they never expected a short haul to success.

* Like Cadillac's "Step gently, proud foot" ads.

Unsettled Price-Setting

Chemical specialties firms making "fair traded" products shifted uncomfortably again last fortnight as a new legal decision regarding the McGuire Act was handed down.

Latest ruling, the first challenge to the act from a state court, was made by Superior Court Judge Walter J. Freund in Newark, N.J. Said Freund: "A court of equity may not issue an injunction to compel a nonassenting retailer to a price-fixing schedule established by a manufacturer of a commodity not affected by public interest, and to that extent the McGuire Act is ineffective."

In essence, Freund held that New Jersey stores that did not sign fair-trade contracts with manufacturers couldn't be forced to observe the price floors if the merchandise moved in interstate commerce.

The decision came in the case where Lionel Corp., toy train maker, sought to have the Grayson-Robinson Stores, Inc., operator of S. Klein department stores, restrained from selling its products below established prices—the same sort of case Schwegmann Bros. (New Orleans) has been involved in.

So while other fair-trading manufacturers watched, S. Klein in Newark last week tempted New Yorkers with big ads for wrist watches, with which it chose to open its war on the price fixing. And Lionel prepared to appeal Freund's decision, which it termed "ambiguous."

Yes and No: To foes of fair trade, Freund's action ("but even a lawful end may not be accomplished by unlawful means") was a timely balance

JUDGE FREUND: Lawful end, unlawful means?

to the decision in the U.S. Circuit Court of Appeals in New Orleans, where Eli Lilly's injunction against Schwegmann Bros. had been upheld only a couple of weeks before (*CW Newsletter, July 11*).

But the New Jersey action will be far from the last one on the price-fixing law. Grayson-Robinson has another case on the fire in California; Schwegmann plans an appeal to the U.S. Supreme Court on the Lilly case. And in the various state legislatures, there are numerous upcoming bills to strengthen or patch up existing fair-trade laws, and to provide them where they don't exist.

Vermont's state legislature recently turned down a bill to give that state a fair-trade law. It remains, with Missouri and Texas, one of the few states that has no such act. In Michigan, nonsigners still aren't bound by the law, but in New Mexico, an attempt to repeal that state's law was voted down.

In legislature and court, drug and cosmetic makers are in the thick of the fight for fair-trade principles. It's going to be a fight to the finish, but it's clear the finish is a long way off.

Call for Chemicals

Farm chemical makers and flyers got together recently to rescue California's rice crop from insects.

Scarcely had the state's 382,000 acres of rice fields been seeded, when the insects, leaf miners, swarmed in. Dieldrin was found to be effective against the pests, and some 100 planes were put on the job spraying the Shell Chemical bug killer onto the rice fields.

Briefs

From recent literature

No. 4 in a Series

Copolymers of vinylidene chloride and ethylene oxide made by reacting the materials in an aqueous medium at moderate temperatures, usually from 35 to 60°C, using an emulsifying agent and polymerization catalyst are readily molded at 135°C. Unmodified vinylidene chloride polymer can only be molded above 180°C.

A fumigant consisting of ethylene oxide and ethylene dichloride may be used in the packaging of dried fruit to destroy the bacteria, molds, and yeasts without heat treatment. The application is made using small pervious cartons which are sealed in a larger master container.

Petroleum emulsions of the water-in-oil type may be resolved by subjecting the emulsion to the action of a demulsifier which is an oxyalkylation product of ethylene oxide and a hydroxyacetic acid-esterified ethylene oxide-modified phenol-aldehyde resin.

A water-insoluble hard resin is yielded by the reaction of ethylene oxide with petroleum hydrocarbon-insoluble pine wood resin. Ethylene oxide is gradually charged to an autoclave containing the pine wood resin and a sodium methylate catalyst. Agitation is used and reaction temperature is maintained at temperatures from 100 to 140°C.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Jefferson Ethylene Oxide in your products or processes.

SPECIALTIES . . . . .

Fogged on at a rate of about half a pound per acre, close to 65,000 lbs. of dieldrin were used. It cost the farmers about $1.50/acre; California Dept. of Agriculture officials pegged the total cost at roughly $1.2 million.

That's not a bad price to pay to save a crop valued at $70 million. Though insect kill was as high as 90%, damage estimated at $16 million was still done.

Flying Chemicals: The dieldrin rescue job isn't the only case of airplanes and chemicals going hand-in-hand. After the rice is planted (by air), fertilizer is spread on the paddies by plane.

And chances are that the "flying chemicals" job isn't done yet. The insecticide spraying has led to another application of ag chems: in order to limit kill of fish and wildfowl that the chlorinated pesticide might cause, California's Ag. Dept. persuaded farmers to drain their fields before spraying, and hold off postspray draining for two weeks. This procedure, which saved the fish, also gave weeds a break. So now it looks like herbicides will be called on to counter the weeds.

•

Bleacher from Buffalo: Buffalo Electro-Chemical Co., Inc., division of Food Machinery and Chemical Corp., is now selling sodium perborate. The mild oxidizing agent, containing 10% active oxygen, is used extensively in the dry cleaning industry and in the formulation of powder bleaches.

•

Lebensraum: Glidden Co. is expanding manufacturing and warehousing facilities of its Nubian Industrial Div. in Chicago. A new three-story brick building, costing about $750,000 and providing 100,000 sq. ft. of space, will adjoin the present Nubian facilities.

•

Brush Cleaner: M&H Brush Cleaner, a liquid cleaner for natural and synthetic paint brushes, is now being offered by M&H Laboratories (Chicago). M&H says the new cleaner will remove oil-, water- and rubber-base paints simply by soaking in the liquid and rinsing in water.

•

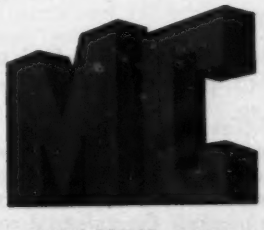
Safety Cleaners: Harco Chemical Co. (Cranford, N.J.) has gone into production of the so-called safety solvents —degreasing compounds developed to replace toxic carbon tetrachloride with relatively safe, nonflammable fluids. Harco offers three products: Metal Cleaner, L-D Safety Solvent, and H-D Safety Solvent.

DRY BROMINE

now available in quantity . . . for use in nickel or monel pipes and valves

Now you may have it immediately . . . bromine with less than *30 parts per 1,000,000 of water*, unusually low chlorine content, too! This new extra-dry bromine will not corrode nickel or monel materially, thus eliminating need for glass pipes or valves.

For full information, for samples, or for fast, dependable supply of "dry" or regular bromine, contact Michigan Chemical Corporation at once.

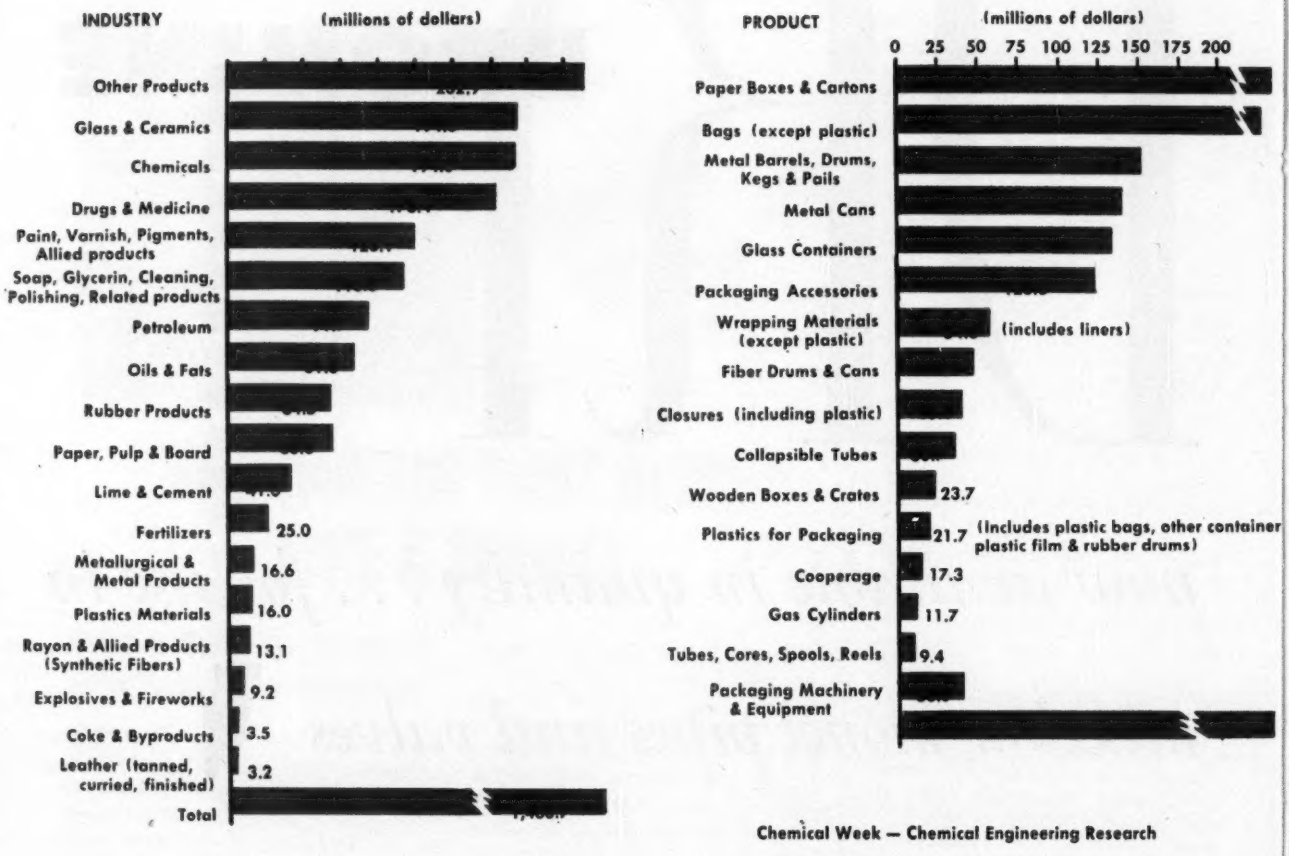


michigan chemical corporation • ***Saint Louis, Michigan***

SALES OFFICE: 230 Park Avenue
New York 17, New York

BASIC MANUFACTURERS OF INDUSTRIAL, PHARMACEUTICAL AND AGRICULTURAL CHEMICALS

Here's what the chemical industries spent in 1952 . . . what they



Wrapped Up in a $1.5-Billion Bill

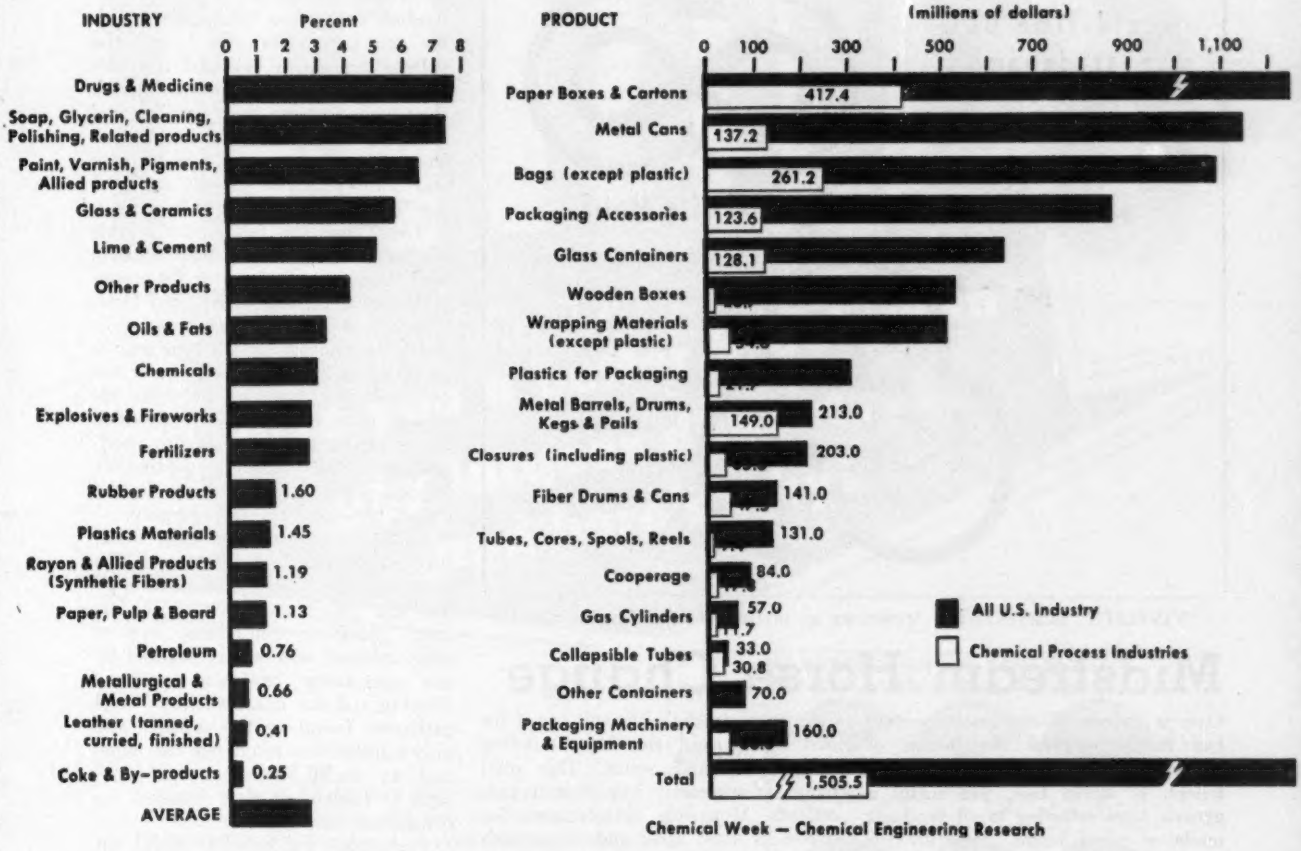
CW and CE market researchers add up the chemical process industries' packaging costs. They total a whopping $1.5 billion.

Wrapped-up CPI products use over 17% (dollar volume) of packaging materials and equipment bought by U.S. industry.

Chemical process industries — with their continuous-flow processes and their large-scale bulk shipments—often tend to overlook the industrial costs that can be grouped under the heading of "packaging." But the makers of packaging materials and equipment know better: they know that the chemical industry is a prime market for their products. And this week they have proof in the form of a special report compiled by CHEMICAL WEEK and *Chemical Engineering* market researchers. It reveals that over 17% of all packaging products are bought to wrap up chemicals—a dollar volume exceeding $1.5 billion in 1952.

Included in this total figure is a bewildering variety of individual expenditures. They range from $1 million for crown caps to $256 million for corrugated boxes. The industry consumed $42 million's worth of labels, seals and tags—and tied the knot on $5 million's worth of rope, twine and string.

bought . . . what percent of output value the expenditure represented.



Nearly a third of the total expenditures went, in 1952, to the general category of paperboard cartons. The second largest expense was for bags of all types.

In addition to these immediately used materials, chemical makers also invested $37 million in packaging machinery. Half of this went for filling and loading equipment; another fourth was devoted to "pre-fill" packaging machinery—designed to open up shipping bags, manufacture collapsible tubes, rinse out drums, and emboss company labels on cartons and cans.

The 17.8% of the total packaging market represented by the chemical process industries is, of course, only an average figure. Individual items vary widely. Over 93% of all collapsible tubes, for instance, find outlets in this area. This contrasts with the low figure of 4.7% for wooden boxes and crates. Significant item: chemical products fill 70% of all metal drums, barrels, kegs and pails.

Top consumer of packages last year (in terms of total output) was the pharmaceutical group. It spent an average of 7.9% of its product value on containers and materials. At the other extreme was the 0.25% for makers of coke and by-products. Average for all of the chemical process industries was 2.72%.

Looking ahead, the report predicts that by 1960 the packaging market will be exceeding $2 billion. For no matter how fast the chemical industry grows, the often-forgotten but never-absent need for packaging materials will grow with it.

"VINYLITE" SUBSTITUTE: Sometimes an investment has to be sacrificed.

Midstream Horse Change

Over a decade of zealous promotion has firmly planted the name of "Vinylite" in the public's plastic intellect. It is, in fact, practically a generic term referring to all products made of vinyl resins. Precisely for that reason Bakelite has withdrawn the tradename from its line of calendered, plasticized polyvinyl chloride films and sheetings, is substituting the name "Krene" in its place.

It was not an easy decision to make. Into discard went hundreds of thousands of dollars worth of national advertising invested in consumer magazines such as *Life, Saturday Evening Post,* etc. Moreover, it means that the same expensive build-up will have to be initiated for the fledgling Krene. And for Bakelite's customers—fabricators of rain coats, shower curtains, wading pools, *et al*—the change will necessitate complete revamping of promotional material, tags and labels.

"Vinylite," itself, will not be discarded, however. In trade circles—where individuals are more aware of the difference between vinyl and Vinylite—the tradename is still a valuable property. Bakelite will use it for cast films, rigid sheetings, molding compounds, and resins. This dual name arrangement has several precedents. Monsanto differentiates between its vinyl films and resins with the names Ultron and Opalon; Goodrich uses Koroseal and Geon.

Too Good: None of these other cases, however, quite duplicate Bakelite's problem—or its solution. When the Union Carbide and Carbon division pioneered in the field of polyvinyl products shortly before World War II, there was no way to predict that its new material's name—Vinylite—would prove to be "too good" a tradename. As a consequence, the company used the single term to describe both its own films (which reached the public after only a single fabricating step) and its resins, out of which other extruders made competing types of films and sheetings. As the sole source of polyvinyl products of any sort, Bakelite could exercise a large measure of control over the quality of vinyl applications.

But the vinyl boom after the war altered this arrangement. Soon there were other producers of basic vinyl compounds—and the number of processors, molders, fabricators, and extruders grew too great for the basic producers to police by polite persuasion or forthright threat.

In a quick-rich atmosphere, the quality of many vinyl products deteriorated. Moreover, the worst offenders were often the smaller molders and fabricators who lacked the volume on which to build a tradename reputation of their own. Instead, they tended to use the term, "a vinyl product," on their labels and tags. In many such a case, it was Bakelite and Vinylite which usually received the "black eye" in the public's mind.

Too Thin: The final straw in this degenerating cycle has undoubtedly been the current fracas over the proper minimum thickness of polyvinyl films. Bakelite—like most other large producers—is convinced that four mils is as thin as a film can safely be if the consumer is to have any value for his money. But in the race to produce the cheapest possible ultimate product, the retail market is continually flooded with vinyl-film items in the three-, two-, and one-mil category.

In this competitive struggle, Bakelite has stubbornly held its own film production at the four-mils minimum.* Yet this effort at "industry leadership" (with its consequent loss of sales volume) was largely negated by the continuing confusion between Vinylite and the unsatisfactory "vinyl products" found on the market. The only solution was to change the name and to build "consumer prestige" with a trademark that entailed no connective confusion.

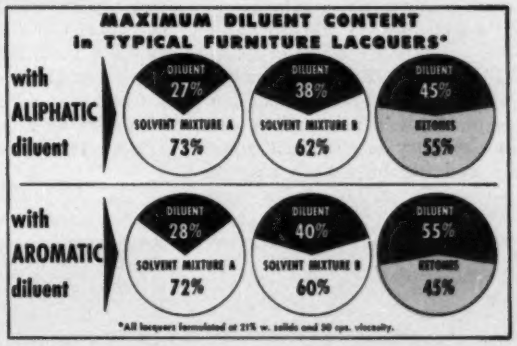
Fortunately for Bakelite, it did not have to look very far for its substitute name. For several years the National Carbon Co. division of Union Carbide has been making a "prestige" line of expensive vinyl home furnishings at its plant in Bennington, Vt. Output of these "Krene" products has just recently been discontinued, and by the simple device of transferring the tradename from one subsidiary to another, UCC has given Bakelite an alternate for Vinylite—for Krene already has a limited, but top-flight reputation in retail trade circles.

By combining the name with Bakelite's triform motif, the company is launching (through full-scale consumer advertising campaigns) a new name that it hopes will become as well known—but for different reasons—as its long time Vinylite workhorse.

* Only exception: a three-mil film sold exclusively to the drapery trade.

KETONES

give you a better break with any lacquer diluent . . . and here's why!



WHETHER YOU USE an aliphatic or aromatic diluent, *you can use more diluent* when the active solvent in your lacquer formulations is a ketone.

A glance at the chart will show how ketones give you a better break. Here are six typical furniture-type lacquers with the same solids content and the same viscosity. They differ only in the active solvent employed. Three contain an aliphatic diluent. Three contain an aromatic. Take a look at the diluent content!

The ketone-aliphatic combination holds 45% diluent, and the ketone-aromatic—55% diluent. *The ketone-based lacquers show the highest diluent content with both types of diluent.*

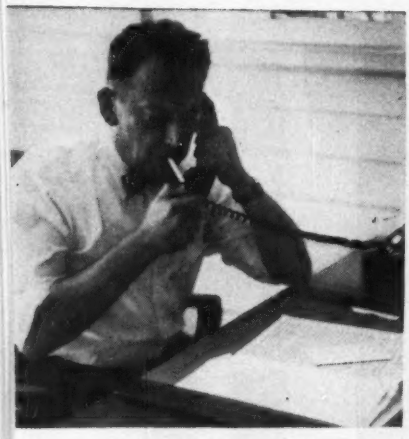
There are other important advantages to be had with ketones, too. You can get higher solids concentration in a practical spraying viscosity range. Or you may use greater proportions of the high viscosity nitrocottons to obtain lacquers with improved toughness and durability.

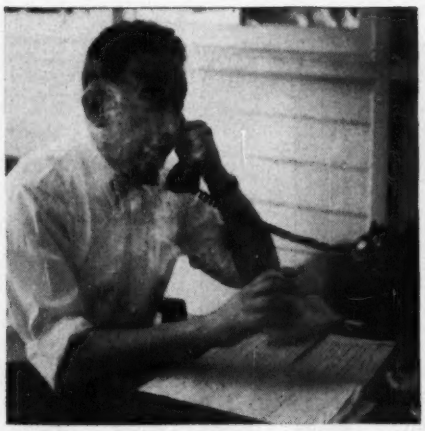
The advantages to be gained from using Shell ketones are summarized in two new pamphlets, *This is MIBK* and *This is MEK*. Ask your Shell Chemical representative for your copies.

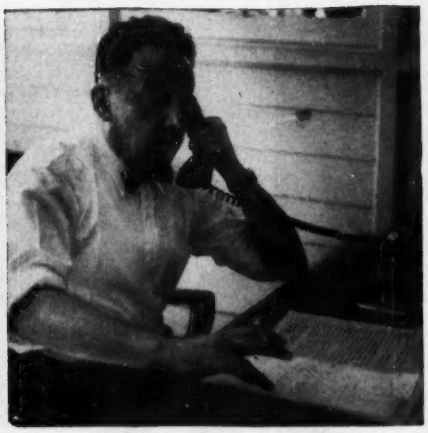
SHELL CHEMICAL CORPORATION

Chemical Partner of Industry and Agriculture

Eastern Division: 500 Fifth Avenue, New York 36 • Western Division: 100 Bush Street, San Francisco 4
Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • St. Louis
In Canada: Chemical Division, Shell Oil Company of Canada, Ltd. • Toronto • Montreal • Vancouver







LIAISON with Kay-Fries Chemicals' headquarters in New York City, part of his job of running its West Haverstraw, N.Y., plant, means

PHOTOS BY CARTER JONES

PRODUCTION . . . . . .

His Job—Keeping the Team on the Beam

Recently CHEMICAL WEEK surveyed plant managers in the chemical process industries to paint a picture of the "average" man in that position. The conclusion was that such does not exist, but that at least you can say that men in charge of chemical plants have these points in common:

They're between 35 and 55 years old; have an average salary of $11,000, $14,000 or $21,000, depending upon whether they run small, medium or large plants; hold a bachelor's degree in chemistry or chemical engineering; and attribute their success to administrative ability and a way with people more than to technical training (which they, of course, admit is necessary). And pointing up the importance of the knack of handling others, they cite personnel problems as their major worry.

To explore further the varied duties that are the lot of the "typical" plant manager, CW's cameraman followed William P. Bitler, in charge of the Kay-Fries Chemicals' plant at West Haverstraw, N.Y.,* as he went about his duties on a "typical" day.

True to Form: Bill Bitler is like most plant managers in that he likes his job, is well paid, has a technical education (B.S. in chemistry and "almost another in chemical engineering" from Carnegie Tech), and sums up his job like this:

"It's a matter of rounding off the sharp edges to keep everyone working on the team, keep each one thinking that this plant, this company is a good place to work."

Like many plant managers employed by smaller companies (Kay-Fries has about 200 employees) that do not have executive offices at the same location, Bitler assumes many

* Some 40 miles north of New York City on the west shore of the Hudson River.

OUT TO LUNCH, Bitler stops to see Rev. Harold Quigley's flowers, is soon deeply absorbed in conversation.

BACK AT THE PLANT, he calls on "Doc" Nicholl, director of research, leaves sample of chemical he wants tested.

much telephone duty for William Bitler.

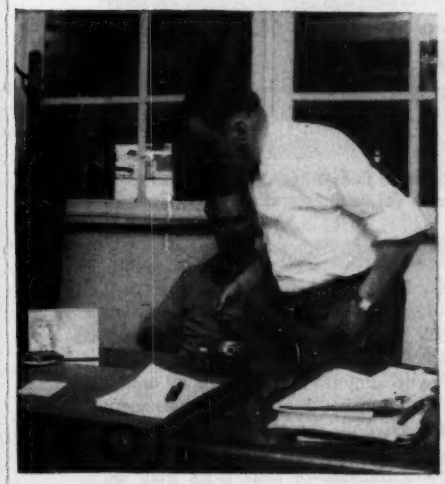
staff functions that might be handled by the central office in some multi-plant organizations. Not only is it his responsibility to run the plant efficiently, but he must also see that his men are treated as well as labor, generally, in the area and that the plant and community get along together. He conducts union negotiations; hires and keeps a close eye on new technical personnel; coordinates research and engineering activities (also located at the plant and under his jurisdiction) with production.

Time on the Line: Sales and purchasing operate out of the New York office, so he is also the "central" through which communications are maintained between the two locations. This means a lot of daily telephone duty and normally a day in "the city" each week.

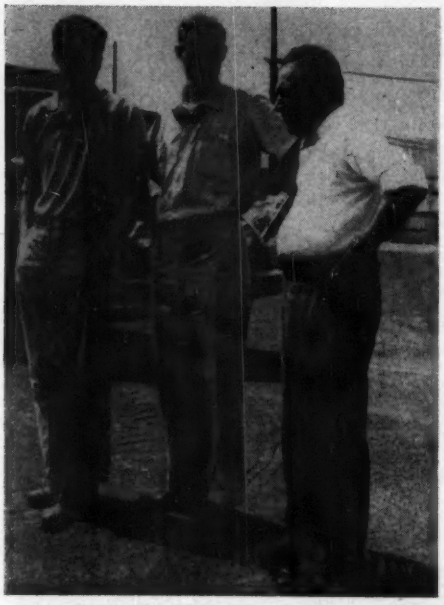
Bitler's performance in keeping his different departments meshing smooth-

THERE'S nothing like a personal chat. Bitler drops in on Plant Superintendent Poynton almost daily; he may have a specific question in mind, just as often doesn't.

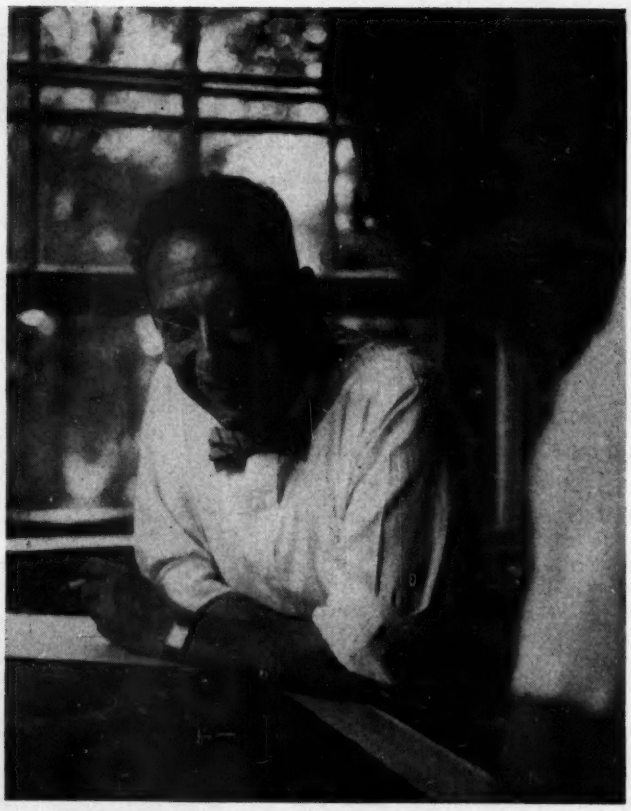
THE PLANT MANAGER heads back to his office after having made one of his frequent trips to see one of his men, or just "to look around."



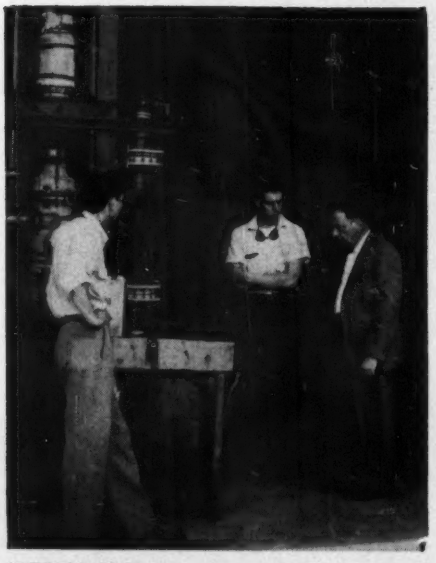
IN HIS OFFICE again, he goes over problem with Al Flisik, head of "process team."



YOUNG ENGINEERS Dave Stevenson and Dick Smith take time out to fill the boss in.



RELAXING over drawing with Ed Opdyke, engineering dept. head, Bitler reminisces that he once designed a similar unit years ago.



SPECIAL UNIT gets once-over; Don Wise and Ernie Eckhardt listen to Bitler's advice.

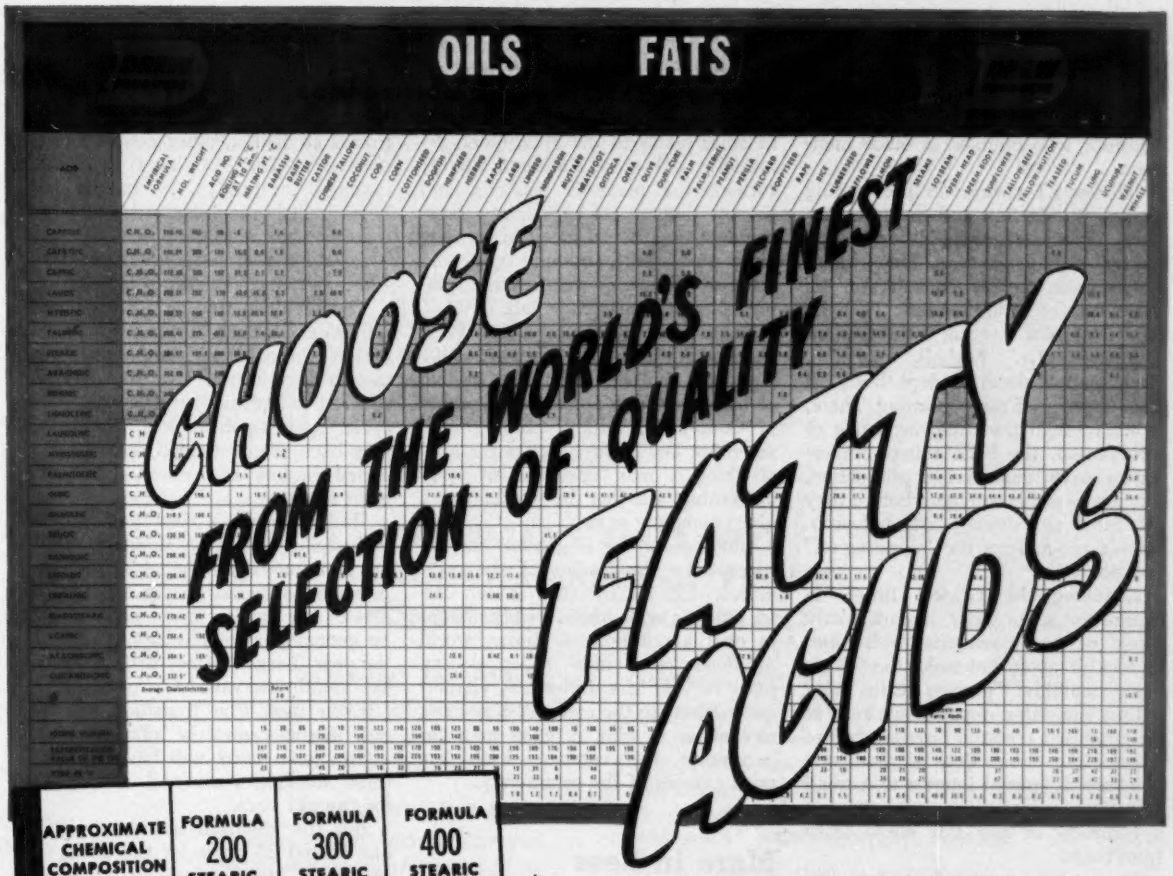
HIS WEEKLY VISIT to the main office finds Bitler huddled with Godfrey Dyne, sales manager, over sales commitments affecting production.

ly with each other can be only as good as his information on their plans, activities and troubles. This would be true in any plant, but is especially so in one like his.

For not only does Kay-Fries manufacture large-volume products—formaldehyde and plasticizers—but it also turns out some 100 different organic intermediates. Scheduling raw materials and equipment is a major problem in itself; add to that the continual dropping of products, and taking on of new ones as customers—many of them in the pharmaceutical field—change their requirements, and you begin to appreciate the kind of know-how needed to keep things running smoothly.

The plant manager can never know enough.

Continual Reconnaissance: That's why Bitler is always going to have a look at something, talk something over with someone. It may be his almost daily chat with Plant Supt. Richard "Poynt" Poynton, in charge of actual production routine; a visit with Leonard Nicholl, director of research (a post Bitler once held), to discuss a new intermediate that sales may be getting impatient for; a stroll to look at a new production unit or some ex-



APPROXIMATE CHEMICAL COMPOSITION AND ATA	FORMULA 200 STEARIC ACID 65%	FORMULA 300 STEARIC ACID 70%	FORMULA 400 STEARIC ACID 85-90%
MYRISTIC	6.0%	6.0%	6.0%
PALMITIC	20.0%	21.0%	6.0%
STEARIC	70.0%	70.0%	85.0%
OLEIC	4.0%	3.0%	3.0%
FFA	99-103	99-103	99-103
TITRE°C.	56-57	58 Min.	60-64
IODINE VAL.	6 Max.	4 Max.	3 Max.
ACID VAL.	196-204	196-204	196-204
SAP. VAL.	196-204	196-204	196-204
COLOR	4.0/1.0	4.0/1.0	4.0/1.0

Take STEARIC ACIDS, for instance . . .

The table at the left illustrates the properties which make DREW Stearic Acids a leading choice everywhere. These hydrogenated, distilled Stearics afford excellent color and odor characteristics, and help make products of high stability and long shelf life.

★**FORMULA 200 (65% Stearic Acid)** Equivalent to double pressed stearic. Excellent for production of non-ionic emulsifiers, metallic soaps. Available in small, non-sticking, easy-to-weigh flakes.

★**FORMULA 300 (70% Stearic Acid)** Equivalent to triple pressed stearic. Premium grade—for the most exacting specifications in hand lotions, creams, deodorants, brushless shaving creams, mascara, etc.

★**FORMULA 400 (85-90% Stearic Acid)** An all vegetable product with exceptionally high titre and low iodine value. For use whenever specifications are more critical than those met by any other stearic acid.

These are but a few of the high quality fatty acids which DREW produces in volume. When you specify DREW, you specify the world's finest Fatty Acids.

DREW HWH 58 Inedible Triglyceride, excellent for use in shaving creams. FFA: 0.5; Iodine Val.: 3.0 Max.; Melting Point: 58°C.; Sap. Val.: 190 Min.

TECHNICAL PRODUCTS DIVISION
E. F. DREW & CO., Inc.
15 East 26th Street, New York 10, N. Y.
CHICAGO PHILADELPHIA BOSTON

DREW PRODUCTS

perimental work; or just a step next door to discuss an office or payroll matter with Ken Rowe, company treasurer who doubles as office manager.

He doesn't always do the visiting though. Production and inventory reports, of course, reach his desk as a matter of daily routine. Department heads come in for consultation on their own, or at his request. Then he holds a regular meeting with his plant committee—Dr. Nicholl, Poynton, Rowe, and engineering dept. head Ed Opdyke—every Friday morning. There, in addition to the usual exchange of information, the little things bothering research, engineering, production, etc., come out in the open before they can fester and develop into big problems—some more of the "rounding off" process.

Reducing the Gripes: Bitler, in charge for seven years, is particularly proud of two managerial techniques he has hit upon that make the job go more smoothly: "process teams" and letting the sales department look at the proposed research program before it goes into effect. Both of these systems are of special interest to a small versatile manufacturing enterprise, but a company of any size could learn from them.

In moving new products from research to commercial production, there was often dissatisfaction voiced by research, engineering and production on the job one of the others had done, were doing or proposed to do. To iron out the friction, Bitler forms teams composed of representatives from research, engineering and production to carry the development forward until it is ready to be turned over to production. The men picked are relieved of all other duties until the project is completed; and Bitler finds that when the team has done its work, gripes lessen.

Before he draws up his proposed work schedule for a given period, Dr. Nicholl considers sales suggestions (in the organic intermediates field, salesmen often furnish valuable leads on a new product a customer would as soon buy as make) in preparing the agenda for a research meeting with Bitler, the sales department and other interested parties in the company. At that session, the sales department can suggest revisions in the proposed program, which research considers and may or may not accept. Out of this mutual understanding of the other's reasons for any decision, has come greater harmony, and more productive research effort.

Beyond the Gate: But Plant Manager Bitler has to keep informed on what's going on outside the plant as well as within. He has many friends in other plants in the area, meets informally with other Rockland County (where the plant is located) and nearby Bergen (N.J.) County management men now and again to trade news and ideas, discuss civic and business problems—particularly personnel—that affect them all.

In a small community like West Haverstraw, the plant manager is the company. Bitler doesn't like to talk of his community activities—Chamber of Commerce, Rotary Club, church activities. For he says they're the kind of thing a man does out of good citizenship whether he works for a given company or no.

But the way he is greeted and respected by the leaders of the community—like Presbyterian Church Pastor Quigley with whom he often stops to chat about flowers, music, world problems or a kids' roller skating party he and Mrs. Bitler may chaperone—reflects to the credit of Kay-Fries as well as to him. A good manager personifies the company—both are good citizens of the community.

More in Less

The chemical industry, which takes pride in dishing up new products for other industries as well as for the ultimate consumer, is itself starting to reap a harvest from some of them this week. For NEMA (National Electrical Manufacturers Assn.) has just added a raft of new standards to the ones approved last fall (CW, Nov. 29, '52). They're all intended to yield more powerful motors that occupy less space. And the organization credits synthetic insulators, varnishes and other products of the process industries with making them possible.

Word on the new standards came from C. O. Hedges, chairman of the Motor and Generating Section of NEMA, speaking before a group of representatives of the automotive and machine tool industries in Detroit.

Those two industries will certainly be in the front ranks of those standing to gain most from the new standards. But the chemical process industries also will be crowding for a place in line. Using roughly 40% of the power generated in the U.S., they easily rank as the heaviest power consumers. And about 70% of their power needs is used to turn motors. Conservatively, there are over 2 million motors in use in process plants.

Long Overdue: Says Hedges: "In the past 25 years, there has been no change in frame assignments for the most popular, high production ratings from 1 to 15 hp., other than a minor change in 1940 in the 1 to 2 hp. ratings . . . [and] . . . motors are being built in much larger frame sizes than is necessary or practical . . . This [standards] program is progress—long overdue, I'm sure you'll agree."

The break in the ice occurred last fall when NEMA approved a suggested standard for ac., open-type motors in ratings of 1 to 30 hp. This covered polyphase, squirrel-cage, 60-cycle, open 4-pole motors. Standards now have been extended to cover enclosed motors and open motors of other speeds.

Hedges makes it clear that motors embodying the new standards will not be immediately available. The approximate schedule set by NEMA indicates the smallest frame motors will be generally available by the first of the year. Larger frames will follow at five-month intervals.

Even then, the transition to the new motors cannot be affected overnight. Some users will have to continue stocking parts and accessories for the old sizes.

But the chemical industry, which has waited 25 years for the changes, can start looking forward to more compact motors. The gratifying part, of course, is that its own products deserve a large portion of the credit.

•

Packaged Recovery: A new packaged unit for continuously neutralizing waste pickle liquor is now being marketed by Eimco Corp. (Salt Lake City). Developed by Eimco and the A. O. Smith Corp. (Milwaukee), the unit is based on controlled oxidation and conductance, is said to be cheap to install and operate. Originally, Eimco engineers started out to develop a recovery process, discarded that idea in favor of a method of converting the waste liquor to a disposable product.

•

Safer Blasting: After exhaustive tests at its mines in the Sudbury District of Ontario, International Nickel has concluded that igniter cord is a slicker, safer means of setting off explosions in its mining operations. Using the igniter cord, only one man need stay at the loaded face and then only long enough to light a single fuse, instead of lighting fuses in each drill hole. Flame travels along the igniter cord, lights the various safety fuses in rotation. The new method, says Inco, works particularly well

10 SUPERIOR SULFRAMIN* FORMULATIONS TO MEET YOUR EXACT PROCESSING REQUIREMENTS

TRY ULTRA'S ALKYL ARYL SULFONATES UNDER OPERATING CONDITIONS IN YOUR PLANT

SULFRAMIN* AB-40 FLAKES
Excellent foam stability, especially at high pH. Very low in dust and odor. Outstanding wetting.

SULFRAMIN* AB-40 BEADS
A neutral synthetic organic detergent, wetting and emulsifying agent of the sodium alkyl aryl sulfonate 40% active type.

SULFRAMIN* HD BEADS
An alkyl aryl sulfonate in spray dried form blended with complex phosphates and organic chemicals for HIGH DETERGENT value.

SULFRAMIN* L
This new, chemically different synthetic, in gel form, offers unusual foam stability and excellent detergency.

SULFRAMIN* AB-CONCENTRATE FLAKES
80-85% active organic material. For blending where high active is required in finished product. Density, .3.

SULFRAMIN* KE LIQUID
Clear amber liquid. 25% active 3% sulfate. Excellent for compounding. Can be tailored to meet your requirements.

SULFRAMIN* AB-CONCENTRATE POWDER
Density, 0.4–0.45. Easy to perfume due to low odor. Low in dust content. Excellent money value.

SULFRAMIN* E LIQUID
Modified alkyl aryl liquid. 25% active. Unusual hard-water resistance and low end-point performance.

SULFRAMIN* AB SLURRY
Alkanes sulfonated to meet your specifications under rigid control. Tank cars and tank trucks only.

SULFRAMIN* AB-40 POWDER
Excellent detergency. Light in color. Less than 1% moisture. Screened, not ground, low in fines.

Wire, write or phone today for details!

ULTRA CHEMICAL WORKS inc.

JOLIET, ILL.
PATERSON, N. J.
HAWTHORNE, CALIF.

ULTRA Chemical WORKS

*T.M. Reg. U.S. Pat. Off.

PRODUCTION . . . . .

when the path of retreat from the face is hazardous or intricate.

•

Pollution Reports: Just off the presses is the Manufacturing Chemists' Assn.'s, second semiannual supplement to its "Air Pollution Abatement Manual." Compiled by George Jenkins and edited by C. A. Gosline, the addition, says MCA, "presents an up-to-date guide to the growing literature on air pollution and techniques being developed to bring about cleaner air." It is the first of the series to include references obtained from the Battelle Technical Review, also carries a revised cumulative index.

•

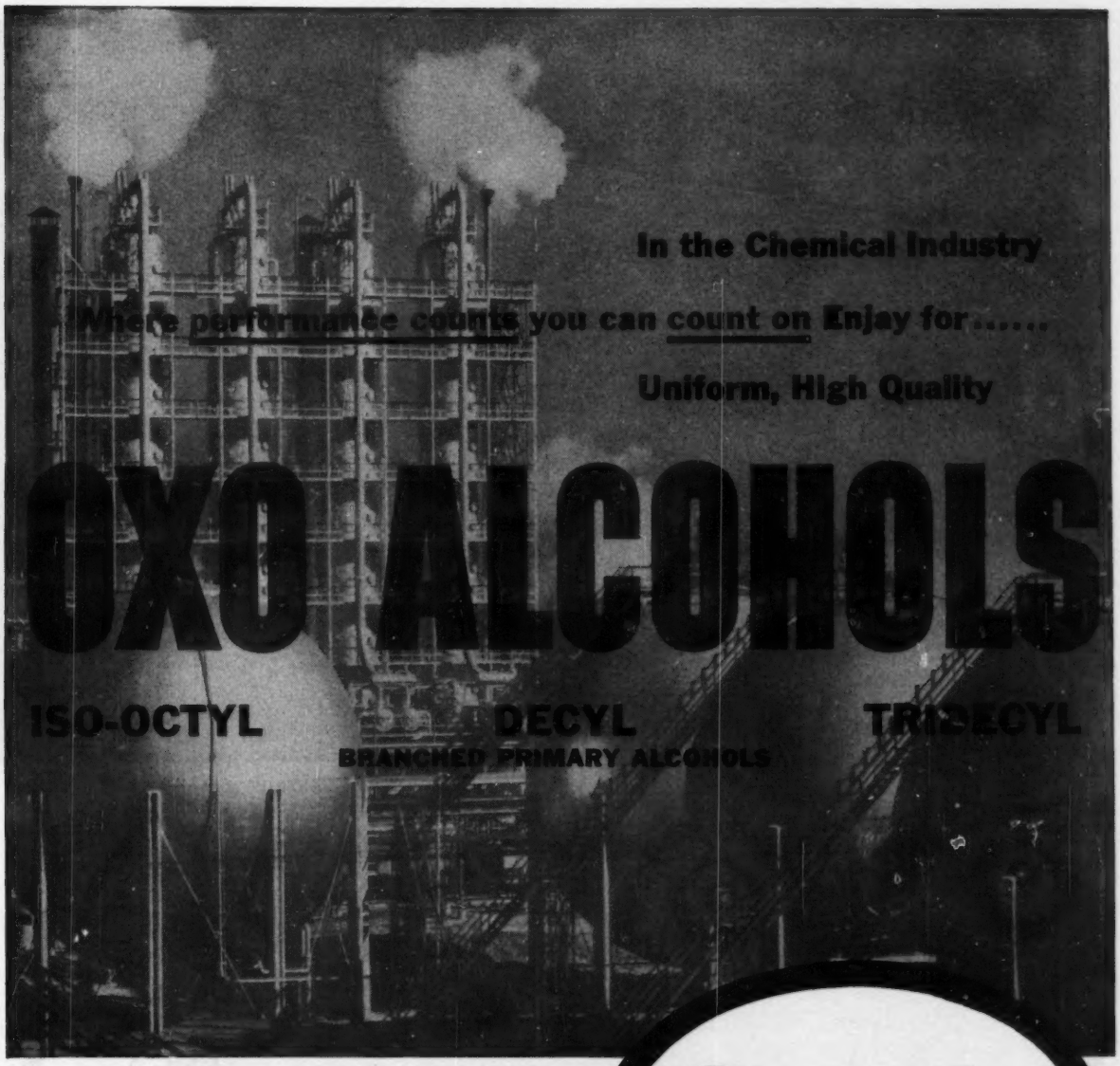
Silicone Fir-t: For the first time, silicone-rubber insulated wire has been approved by the Underwriters' Laboratories. Credit for the first goes to the Essex Wire Corp. (Fort Wayne, Ind.) and its product, Sil-x wire. Covered with a 15- to 77-mil coating of a General Electric silicone rubber, the wire has been approved in seven sizes for use in lighting fixtures up to 200 C and for radio and television hookup wire at temperatures up to 150 C. On application by specific users, 19 other sizes of wire and cables will be approved for operations up to 200 C.

•

Reclaiming Rights: The Neville Co. (Pittsburgh, Pa.) last week acquired exclusive rights to the patents of Charles H. Campbell dealing with rubber reclaiming oils and rubber reclaiming processes. Campbell has been working on the projects since World War II when the synthetic rubber industry sprang up and when new techniques were required for reclaiming GR-S and mixed GR-S and natural scrap. His work, says Neville, has been of help to the reclaiming industry then and since. Neville has also appointed Paul Long, an associate of Campbell, to its technical sales force.

•

Fabricating Rights: Also last week, The Pfaudler Co. (Rochester, N.Y.) obtained fabricating rights to the turbogrid trays developed by Shell Development Co. (Emeryville, Calif.). The trays, used in fractionating towers, are said to give higher throughputs than conventional bubble caps. The tray itself is a flat grating over the entire cross-section of the column. Efficiency is less than that of a bubble cap, but higher capacity means that more trays can be installed for a given tower height. The net result: an efficiency per foot that is roughly equivalent to that of a bubble cap tower.



A pioneer and leading marketer of Oxo-Alcohols, the Enjay Company with its affiliates, have greatly expanded production to keep pace with increased sales. Quality has been constantly improved. More and more manufacturers of esters, plasticizers, synthetic oils, detergents and other chemical derivatives are turning to Enjay for Oxo-Alcohols.

ENJAY

A complete line of dependable products for Industry

PETROLEUM

Paranox
Paratone
Paraflow
Parapoid
Paradyne
Paratac
Enjay Anti-Freeze
Petrohol
Methyl Ethyl Ketone
Dewaxing Aid
Ethyl Ether
Isopropyl Ether
Reference Fuels

SURFACE COATING

Petrohol 91
Petrohol 95
Petrohol 99
Secondary Butyl Alcohol
Secondary Butyl Acetate
Isopropyl Acetate
Acetone
Methyl Ethyl Ketone
Ethyl Ether
Isopropyl Ether
Dicyclopentadiene
Naphthenic Acids
Iso-Octyl Alcohol
Decyl Alcohol

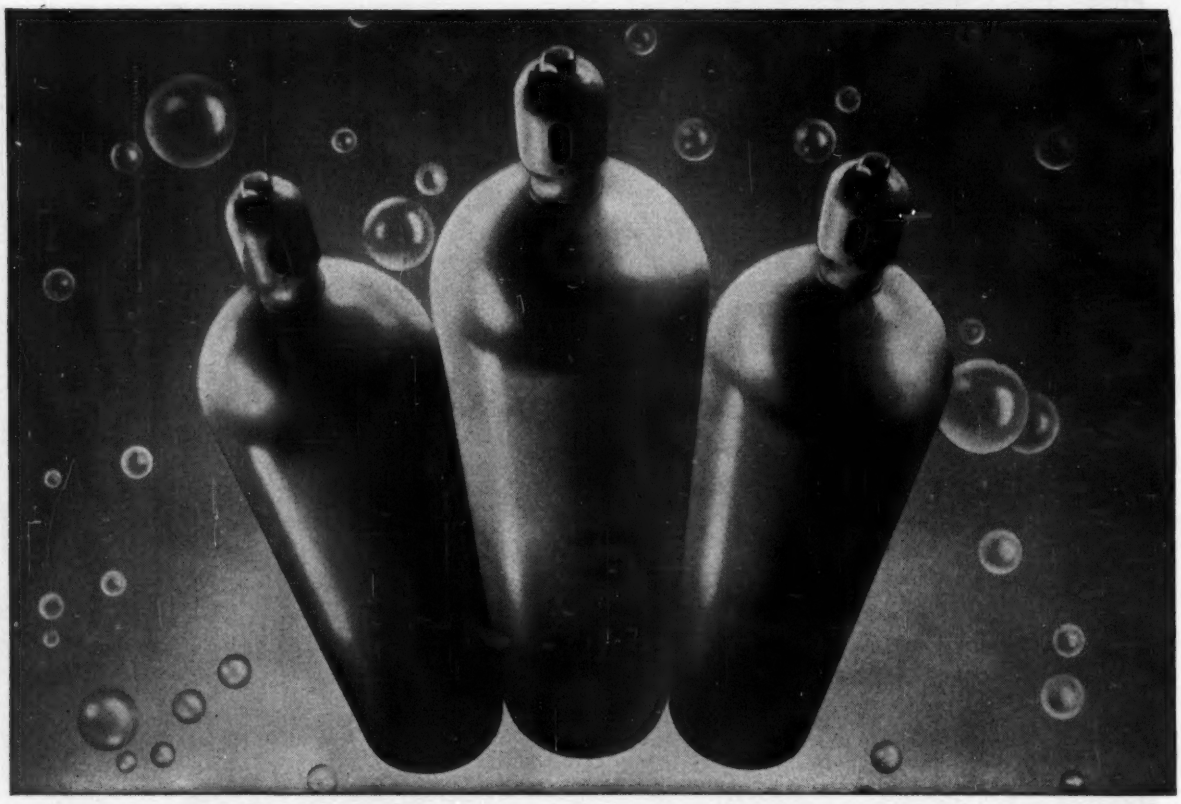
CHEMICAL

Petrohol 91
Petrohol 95
Petrohol 99
Iso-Octyl Alcohol
Decyl Alcohol
Tridecyl Alcohol
Dicyclopentadiene
Isoprene
Butadiene
Ethyl Ether
Isopropyl Ether
Tripropylene
Tetrapropylene
Acromatic Tars
Acetone
Methyl Ethyl Ketone

The Enjay Company has long been recognized as a leader in the development and marketing of high-quality products for the oil, surface coating and chemical industries. Backed by greatly expanded plant and distribution facilities, the Enjay Company is supplying a constantly growing list of chemical products to many different industries.

BE SURE TO CALL ON ENJAY FOR YOUR CHEMICAL NEEDS

ENJAY COMPANY, INC.
15 West 51st Street, New York 19, N.Y.



SHIP 'EM FULL...OR SHIP 'EM EMPTY...

Hackney Lightweight Cylinders

SAVE YOU PLENTY!

There's no excess weight in a shipment of Hackney Seamless Compressed Gas Cylinders—no waste freight charges out *or* back.

For one reason—selected, high-quality steels assure adequate strength and light weight. For another—the Hackney process of cold drawing results in a uniform sidewall thickness that eliminates excess material.

MADE FOR THE SAFE TRANSPORTATION AND STORAGE OF MANY GASES—Hackney cylinders are convenient to handle... easy to fill and empty. They resist transportation and handling abuse ...*more than meet* all ICC regulations.

Write for complete information on the many types and sizes available.

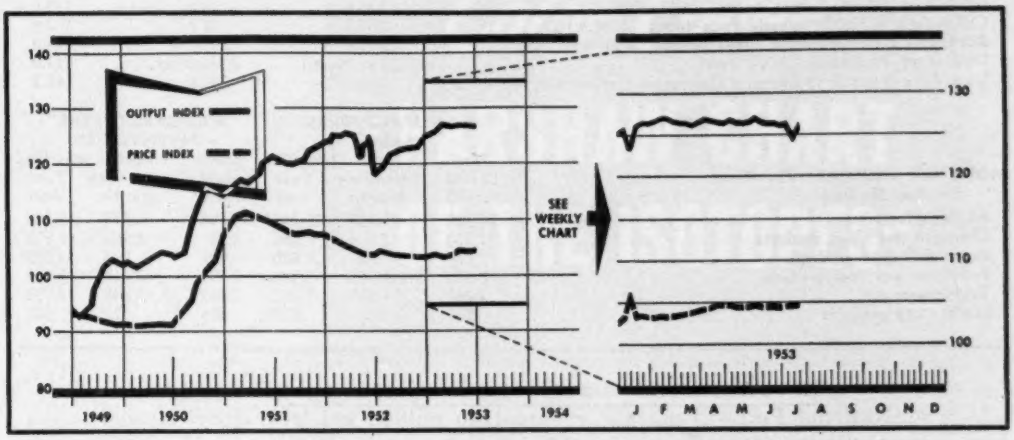
Pressed Steel Tank Company

Manufacturer of Hackney Products

1448 S. 66th St., Milwaukee 14 • 1321 Vanderbilt Concourse Bldg., New York 17
251 Hanna Bldg., Cleveland 15 • 936 W. Peachtree St., N.W., Room 134, Atlanta 3
208 S. LaSalle St., Room 794, Chicago 4 • 576 Roosevelt Bldg., Los Angeles 17
18 W. 43rd St., Room 17, Kansas City 11, Mo.

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

MARKETS . . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

Most chemical sellers have been chalking up some brisk, in-the-black-column business these past few weeks, despite marked-up third-quarter price tags. And the experience, though far from unpleasant, has not a few wondering.

Some things that might have been expected to clip demand, but didn't: the volume of pre-hike date June buying; current and upcoming summer vacation shutdowns of many industrial plants.

The continuing demand has some observers convinced there'll be no wholesale deflation of prices, no mass cutbacks in the higher July 1 postings. Not, anyway, during the current quarter.

•

There are, however, some straws in the wind that indicate chemical buying may be losing some of its momentum. In heavy chemicals, for instance, producers—checking July sales against June—are finding that the curve has dipped slightly.

Soda ash and caustic at the mid-month mark are down about 10%; orders booked for the balance of July show a like decline.

Potassium carbonate demand has slackened considerably. This may well be the bellwether for near-future market conditions. For the reasons behind the easing could apply to many items: closing down of some prime consuming outlets (glass plants); users' inventories higher because of build-ups during the last half of June.

•

Most synthetic resins are undergoing the same sort of faltering. Alkyds, maleics, phenolics consumers, in particular, are easing up a little in their inquiries. Producers, though, aren't showing too much concern. And for two very good, morale-boosting reasons: they see the lull as "normal" for the season; and, surprisingly, the drop is not as great as was expected.

•

On the other hand, alcohol demand seems to be firming up. The government take is good; civilian consumers are steadily dipping into available supply. One stepped-up outlet: shellac makers who furnish the floor-wax-plus-shellac (for "hard-shine") manufacturers.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	125.9	126.0	119.0
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.8	104.8	102.4
Bituminous Coal Production (daily average, 1,00 tons)	1,317.0	1,630.0	1,015.0
Steel Ingot Production (1,000 tons)	2,183.0(est.)	2,134.0(act.)	317.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	243.1	249.6	248.2

MONTHLY INDICATORS—Trade (Million Dollars)	MANUFACTURERS' SALES: May Latest Month	April Preceding Month	May 1952 Year Ago	MANUFACTURERS' INVENTORIES: May Latest Month	April Preceding Month	May 1952 Year Ago
All Manufacturing	26,314	26,838	23,247	45,048	44,574	43,144
Chemicals and allied products	1,820	1,808	1,566	3,021	2,969	2,973
Paper and allied products	712	720	630	982	998	1,039
Petroleum and coal products	2,050	2,146	1,846	2,795	2,726	2,544
Textile products	1,260	1,345	1,148	2,669	2,648	2,735
Leather and products	326	299	274	604	572	575

There's no threat of a shortage in sight, though. The first trickle of National Petro-Chemicals' eventual 40 million gal./year ethyl alcohol production—originally scheduled to be onstream this summer—will hit the market about September or October.

That output will, for the most part, replace fermentation products. A good share will go to ex-customers of ex-fermentation producer Du Pont (who stepped out last fall, CW, Nov. 15, '52); and some is destined for U.S. Industrial Chemicals.

The substitution has a double meaning for the latter company. It foreshadows certain stand-by status for USI's New Orleans fermentation plant; may displace one of its current suppliers.

•

A production halt is also in the cards for a major 2-methyl-5-ethylpyridine (MEP) producer's Houston (Tex.) installation. The decision to put the works in a stand-by condition may have been prompted by the recent temporary shutdown of Chemstrand's Decatur (Ala.) Acrilan plant. The latter has been a 5 million lbs./year customer.

It's no secret that other MEP producers, too, are finding it difficult to sell all their output. The market is definitely on the softish side.

•

And in direct contrast to conditions a year ago, refined 2-degree pyridine is sporting a loose label. By this week the customer who can't get all he needs is the exception. Most are completely satisfied.

In fact, not a few producers are exporting excess material. Though there have been no deviations from officially pegged prices, trade talk has it some makers are shaving tags to push such sales to foreign countries.

•

A hike in the Government's butyl synthetic rubber price may mean a behind-the-scenes flip-flop in Washington. Reports late last week that the tire tube synthetic tag will be boosted 1¼¢/lb. refutes May's denial by "high and completely responsible sources close to the administration" (CW Market Letter, May 2) that the RFC was considering such a price raise.

But there is no change contemplated in the 23¢/lb. GR-S price. The agency, however, plans to abandon its costly alcohol butadiene program —an action that will trim production of GR-S about 100,000 long tons a year.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 20, 1953

DOWN

	Change	New Price		Change	New Price
Tin chloride, stannous anhy., drms., wks	$ .012	$1.019	Sodium stannate, drms., wks, frt. alld.	$ .01	$ .525
Tin sulfate, stannous, bbls.	.011	.891	Carnauba wax, No. 2 crude, bgs., ton lots	.01	1.14

All prices per pound unless quantity is stated.

ANTIBIOTIC PRODUCTION BOX SCORE

(in pounds)

Year	Penicillin	Streptomycin	Dihydrostreptomycin	All other	Total
1948	161,500	81,900	*	*	**
1949	248,900	54,300	139,000	*	**
1950	429,400	45,700	157,800	220,000	852,900
1951	625,000	39,000	315,000	307,000	1,286,000†
1952	671,000	50,000	337,000	429,000	1,487,000†

Source: U.S. Tariff Commission.
Footnotes:
* Separate figures not kept.
** Figure not available because not all types of antibiotics were reported.
† Includes human and veterinary use, but not animal feed supplements, which were begun to be kept with 1951. Additional poundage for this purpose: 1951—236,000 lbs.; 1952—258,000 lbs.

Over the Hump?

Even though antibiotics haven't been exactly booming along lately, just-compiled figures reveal that 1952 was a peak year, production-wise. All types of antibiotics chalked up top records with the exception of streptomycin.

Penicillin producers, despite both adverse price conditions and unfavorable publicity for their product, grew 7% more of the "miracle" mould last year than in previously record-high 1951. Almost half of all antibiotic poundage was represented by this single item.

Both economic and adverse publicity shadows now appear to be fading for penicillin:

• Having weathered last year's price war, the surviving producers are now becoming more optimistic over (1) increased usage in animal feed supplements and (2) mildew-inhibiting and plant disease control applications.

• Unfavorable newspaper and magazine reports about penicillin and other antibiotics are now being parried. In a long editorial on the reactions to and limitations of antibiotics, Henry Welch, director of the Food & Drug Administration's antibiotics division, writing in the June issue of *Antibiotics and Chemotherapy*, defended them as (1) still effective and safe for the vast majority of people and (2) victims of indiscriminate use. Physicians are now receiving more special mailings from the makers, which describe the latest findings on antibiotics limitations.

Just how fast the penicillin makers can recover from last year's blows is anybody's guess. Right now it looks as though they've only one direction to go—up.

Count on Steel

By this week it looked as though the chemical industry could depend upon continued good business from one of its best customers. Latest studies of the steel industry outlook point up at least these two predictions:

• That steel ingot capacity, now rated at about 117 million tons, is due to step up to a round 120 million for 1954.

• That long-range steel demand—based upon (1) expansion of population, (2) new family formation, (3) economic outlook, (4) improvement in the standard of living, (5) export and military needs—all adds up to a minimum of a 100-million-ton steel ingot year for next year.

To the chemical suppliers this outlook is right heartening. It means:

• Sales to the basic iron and steel makers should kite to an all-time high of $135 million for the coming year.

• Additional cash register ring-ups from steel plating, finishing and fabricating customers could probably raise the total chemicals tab to $600 million or higher.

But even confining the ferrous chemical bill to the more basic operations, the sum total of $135 million ranks the industry as one of the favorite dozen customers.

Five or six years ago, steel (with a chemical consuming bill of almost an even $100 million) stood about 14th in the line of major users. And it's been moving up the line steadily.

Last year, despite the extended industry-crippling strike, the steel makers picked up a chemical check for approximately $125 million. Even for the multibillion-dollar chemical industry, that's not exactly insignificant.

The steady and sturdy increase in steel's chemical diet has been accompanied by a minimum of fanfare. Reasons for the paucity of publicity

narrow down to about two:

- Iron and steel producers, through their huge coal co-products output, are usually thought of as chemical suppliers rather than users.
- Radical innovations in production methods, giving rise to changing chemical needs, are relatively few. Result: big chemical orders are simply taken for granted.

Lumping together totals of the principal chemicals absorbed in one or more basic iron and steel operations yields the composite amounts and items lined up in the table (*page 68*). Numerous lesser amounts could extend the list indefinitely.

Some items (sulfuric acid is an example) enter into such a multiplicity of operations that tracing each individual use would lead to endless ramifications.

However, taking present practice as a guide, the main chemical-consuming operations fall about like this:

- Recovery and treatment of by-products from coke ovens.
- Blast furnace burden (or charge) and modifiers.
- Iron-to-steel conversion by open hearth, electric furnace or other methods.
- Rolling and finishing steps for plate, bar, sheet, etc.
- Surface treatment preparation—for plating, tinning, etc.

Big Stand-bys: A huge gulp of sulfuric acid is swallowed in reaction with coke oven ammonia and to wash light oils. Of the total in the table, almost a million tons of acid is put to by-product treatment. Ordinarily, in defining sulfuric acid requirements for the steel industry (*CW, July 11*) the coke oven needs are excluded; usual figures apply more specifically to the metal treatment—scale removal or pickling operations.

Coke oven by-products also take up most of the caustic soda total—for neutralizing reactions and removal of phenol.

At the blast furnace, far-and-away the biggest chemical present is, of course, raw limestone. (It's also needed in the subsequent open hearth steel-making step.) Most of the soda ash finds use at the end of the blast—usually added to the cupola to desulfurize molten iron.

In the iron-to-steel step, whether by open hearth or electric furnace method, burned lime plays a big role. Here, also, for making up a satisfactory flux, or subsequently being added for deoxidation (to control liberation of gas on cooling), ferrosilicon, ferromanganese, silicomanganese, fluor-

Now . . . Steel Gobbles Up These Chemicals . . .

(Tons per year)

40 million	Limestone	5,000	Rock salt
1¾ "	Sulfuric acid	4,000	Zinc chloride
1½ "	Burned Lime	3,900	Hydrochloric acid
1 "	Ferrosilicon	2,500	Sodium fluoride
¾ "	Ferromanganese	2,000	Sulfur
300,000	Fluorspar	1,700	Sulfur dioxide
50,000	Silicomanganese	1,500	Nitric acid
43,000	Phosphoric acid		plus nonferrous metals
24,500	Borax	50,000	Aluminum
15,000	Palm oil	4,000	Copper
13,000	Ammonium chloride		and Miscellaneous
10,000	Caustic soda	wetting agents	
10,000	Metallic sodium, soda ash, sodium nitrate, other sodium compounds	buffer compounds	
		degreasing solvents	
		cleaners	
7,000	Sodium bichromate	carburizers	
		mineral and vegetable oils	

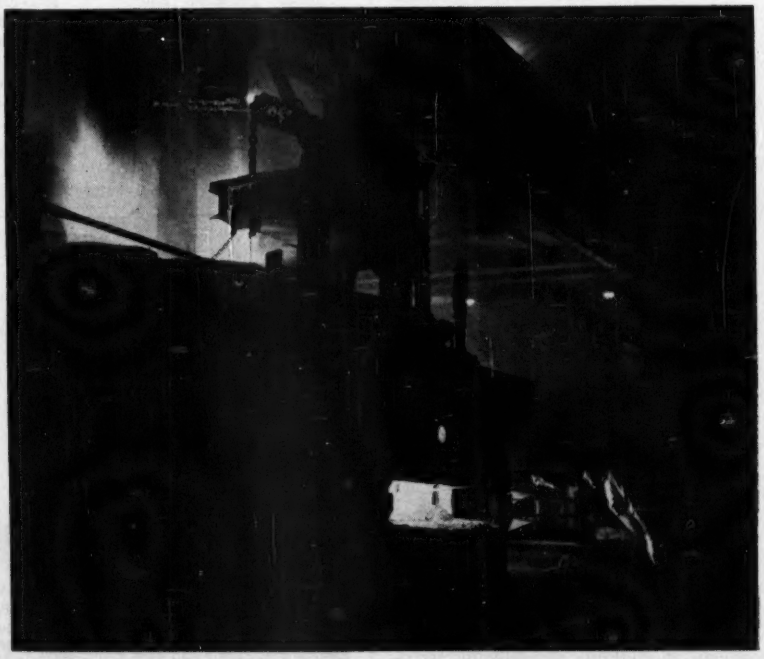
spar, and sodium fluoride come into play.

• About half of all metallurgical-grade fluorspar used in this country winds up in the steel furnaces. Alternate loose and tight supply conditions have given steel makers many a headache. Various substitutes have been thrown into the supply gap from time to time but, so far, none has proved as satisfactory as fluorspar for promoting solution of lime in the slag.

• Sodium fluoride, now being taken at about 2,500 tons/year, is moving rather slowly compared with a few years ago, when it was nearer a 10,000-ton rate.

• Aluminum, besides deoxidizing, is used in varying quantities to regulate the hardenability of the steel. Lately, small amounts of boron, usually added in the form of a ferro-alloy, have been introduced, also to increase hardenability.

• Other elements are often added at the end of the steel-making stage: copper, to increase resistance to atmospheric corrosion; sulfur, to im-



STEEL FURNACE: More chemicals will be fed into its maw.

prove machinability. Lead, also formerly used to increase machinability, has almost passed from the picture, at least as far as the large producers are concerned. Added to molten steel, its high volatility combined with toxicity caused numerous cases of poisoning.

Changing Times: Steel men like to be considered as progressive conservatives. After all, they reason, a blast furnace or rolling mill can't be altered overnight just to suit the whim of the producer.

But regardless of this attitude, steel makers have been changing some of their methods over the past few years. And a new operating step or condition can sound a death knell or create new demands.

High-speed rolling mills, for instance, are eliminating the practice of throwing rock salt on plate to remove scale. At modern rolling speeds of 1,000 ft./minute, a man couldn't do much of a job distributing the salt over the plate surface, anyhow. Older, slower mills still use rock salt, however.

Probably the biggest single factor in steel technology affecting chemical diet is the switch in tinplating from the old pot-dip method to the electrolytic process. Already in process of change-over for several years, this trend is lessening demand for:

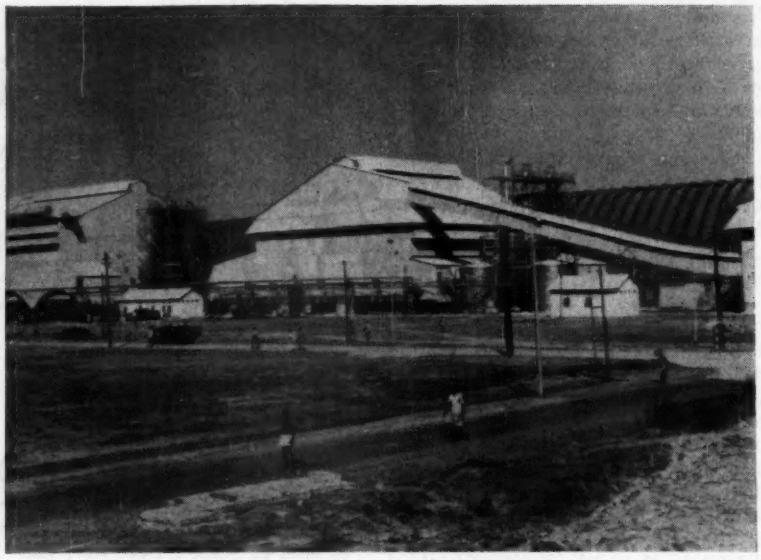
- Ammonium and zinc chlorides, commonly used in the tinning flux.
- Palm oil, usually present on the exit side of the tinbath, to protect the tin from oxidizing and to keep the coating in a molten condition during rolling and brushing.

Furthermore, despite steel men's declarations that stability is the watchword, other changes are occurring:

- There's a notable gain in phosphoric acid consumption in pickling for coatings.
- More and more wetting agents, chemical buffers, degreasing and rustproofing compounds are coming into play for finishing and plating preparation.

Dual Role: In balance, chemicals pouring from steel coke ovens probably outweigh, dollarwise, the steel industry's needs by at least three-to-one. But to let the more colorful coal chemical output take the spotlight from the relatively staid and steady intake would be ignoring one of chemical makers' biggest and most solid customers.

With steel now heading for all-time capacity output, chemical makers have a twofold reason for following its line of flight; in addition to being a general economic bellwether, more steel means directly—more chemical sales.



FROM SINDRI'S sulfate plant and . . .

Progress at Sindri

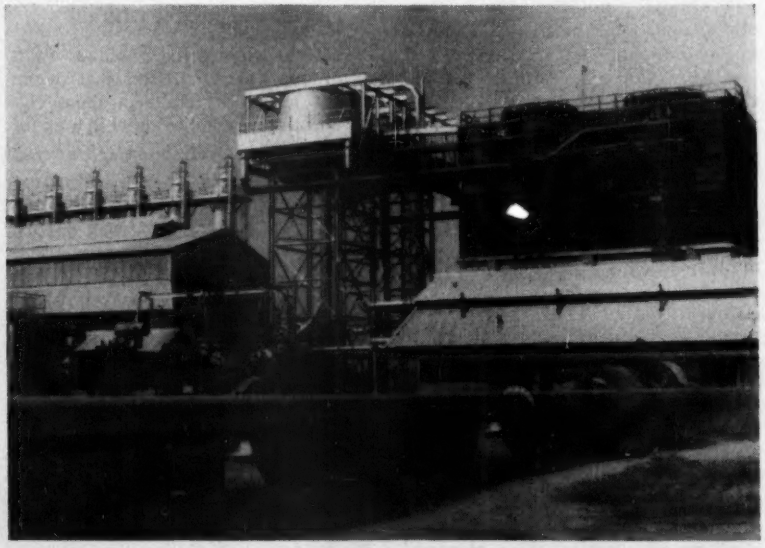
With marketing tangles apparently solved, India's $48-million fertilizer factory—biggest single manufacturing unit in the country—is now shooting for its target production of 350,000 tons of ammonium sulfate annually.

The government-sponsored plant at Sindri, opened 15 months ago, marked its first year by (1) producing 250,000 tons and (2) reducing the price per ton from Rs 400 (about $84) to Rs 285 (about $60).

During this period, however, the management ran into marketing trouble. Early this year stocks had accumulated to the tune of 80,000 tons. But by this week distribution wrinkles were smoothing away.

And stimulated by the latest price cut, Indian fertilizer purchases are now being augmented by large orders from neighboring Pakistan.

Just how much effect Indian farmers' developing interest in fertilizer may have upon foreign producers remains to be seen. Last year U.S. exporters sold the Indians $1¼ million's worth of ammonium sulfate fertilizers.



. . . ammonia-cooling towers flow a growing need.

Stokes is a Pioneer in High Vacuum

Stokes engineers are pioneers in the use of vacuum... first to develop commercial techniques for the preservation of blood plasma... first in vacuum research and application... designers and builders of the equipment by which vacuum cuts costs, improves products, creates new goods and new markets.

Stokes is the *only* manufacturer of *complete* vacuum systems. During fifty years of experience with vacuum and high vacuum, Stokes has built to customers' requirements, with a sure knowledge of what *is* and what *is not* practical.

Visit the Stokes plant and see for yourself what makes Stokes *first* in vacuum... first in the manufacture of complete vacuum processing systems.

F. J. Stokes Machine Company, Philadelphia 20, Pa.

One of the first real signs of hope in the fight against paralytic poliomyelitis is gamma globulin, an extracted component from human blood, containing antibodies, which serve as a partial immunizing agent. Because it is destroyed at heat above body temperature, it cannot be dried by ordinary methods. Yet it *must* be dried to make it available for use when needed. The solution is to freeze the product rapidly, then apply mild heat under high vacuum conditions. Stokes Vacuum Freeze-Dryers are used for this purpose; also, for preserving blood plasma, hog cholera serum and many other substances which are sensitive to heat. Brochures, entitled "Freeze-Drying in Industry" and "Laboratory Freeze-Drying" are now available.

This isn't before and after the battle; it's before and after a toy tank has been metallized under vacuum. These tanks are injection-molded of scrap plastic; then placed by the dozens in the chamber of a Stokes Vacuum Metallizer. After 10 or 12 minutes, the pressure in the chamber is reduced to less than one micron. Aluminum staples are heated to the vaporizing point, assume molecular freedom, and instantly are deposited as a thin metal film over the dozens of toy tanks. Stokes Vacuum Metallizers are also used for finishing great quantities of costume jewelry at low production cost, and for many industrial purposes. We shall be glad to send a brochure, "Vacuum Metallizing Today".

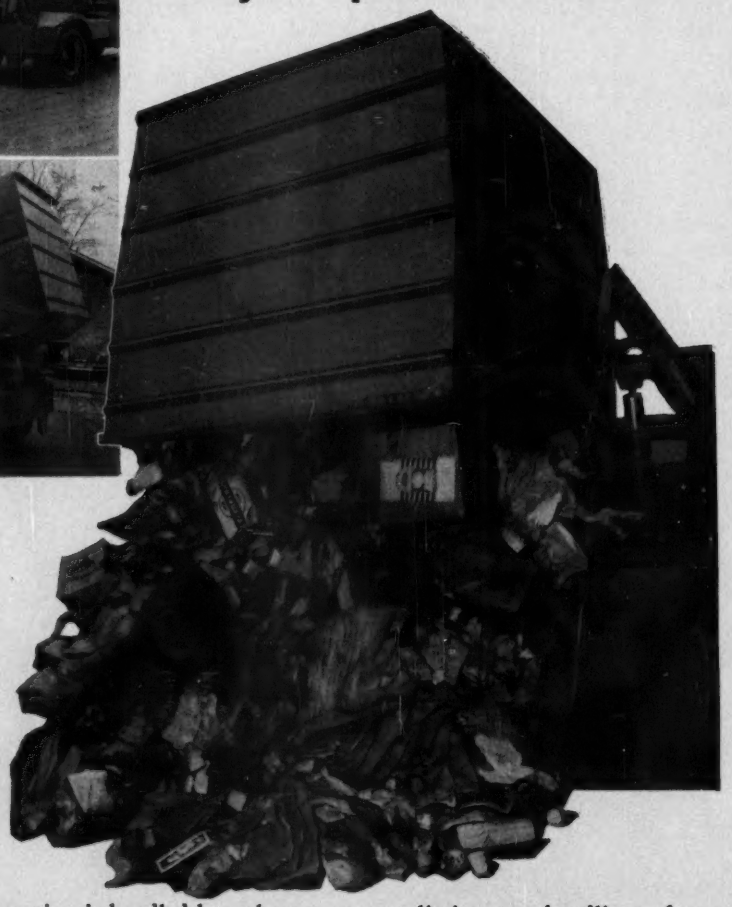
Among the little gadgets that make TV sets so efficient today are capacitors. These are what used to be known as condensers; for TV purposes, they are made of a paper and metal assembly which has been impregnated with a liquid possessing a high dielectric strength. This prevents electrical leakage even under high humidity. Stokes Vacuum Impregnators are used to impregnate thousands of these capacitors at a time. Once the air is exhausted from every fold and fiber of the paper, oil is introduced from an adjacent chamber and instantly fills every tiny, empty pore. Send for the new 24-page brochure on "Vacuum Impregnation."

Many airplanes of the future will take advantage of the high strength-weight ratio of titanium. It is a plentiful metal, spurns most corrosives which affect other metals, and endures extraordinary heat. Unfortunately, during some stages of production titanium has an incorrigible affinity for other elements . . . it wants to be anything but pure titanium. Part of the processing of ore to metal must therefore be carried out in vacuum. Stokes Vacuum Furnaces are designed for this purpose. Zirconium and hafnium are other metals long known to science as laboratory curiosities but of little practical value because they could not be smelted or refined to practical purity. Now they become useful as they are processed under high vacuum conditions. Write for the bulletin on Stokes Vacuum Furnaces.

STOKES

STOKES MAKES: High Vacuum Equipment, Vacuum Pumps and Gages / Industrial Tabletting, Powder Metal and Plastics Molding Presses / Pharmaceutical Equipment

Rubbish Disposal is only ONE of the Cost Cutting jobs for the Dempster-Dumpster in your plant...



It's amazing, almost to the point of fantasy, yet so soundly real, what the minds of men in all types of industry have cooked up for more efficiency and reduced costs with the Dempster-Dumpster.

Hundreds of plants are handling materials of practically every description with one truck-mounted Dempster-Dumpster serving scores of detachable containers. Here are just a few. Oils, gases, and liquids handled in our Tank Type Containers . . . tools and equipment in our Tool Shed Type Container . . . containers on casters placed for receiving steel chips from lathes or at conveyors for receiving finished products . . . container with doors and windows, replacing shacks for plant guards or nightwatchmen . . . containers built to handle chlorinator ash residue of approximately 1500° F. and there are dozens more.

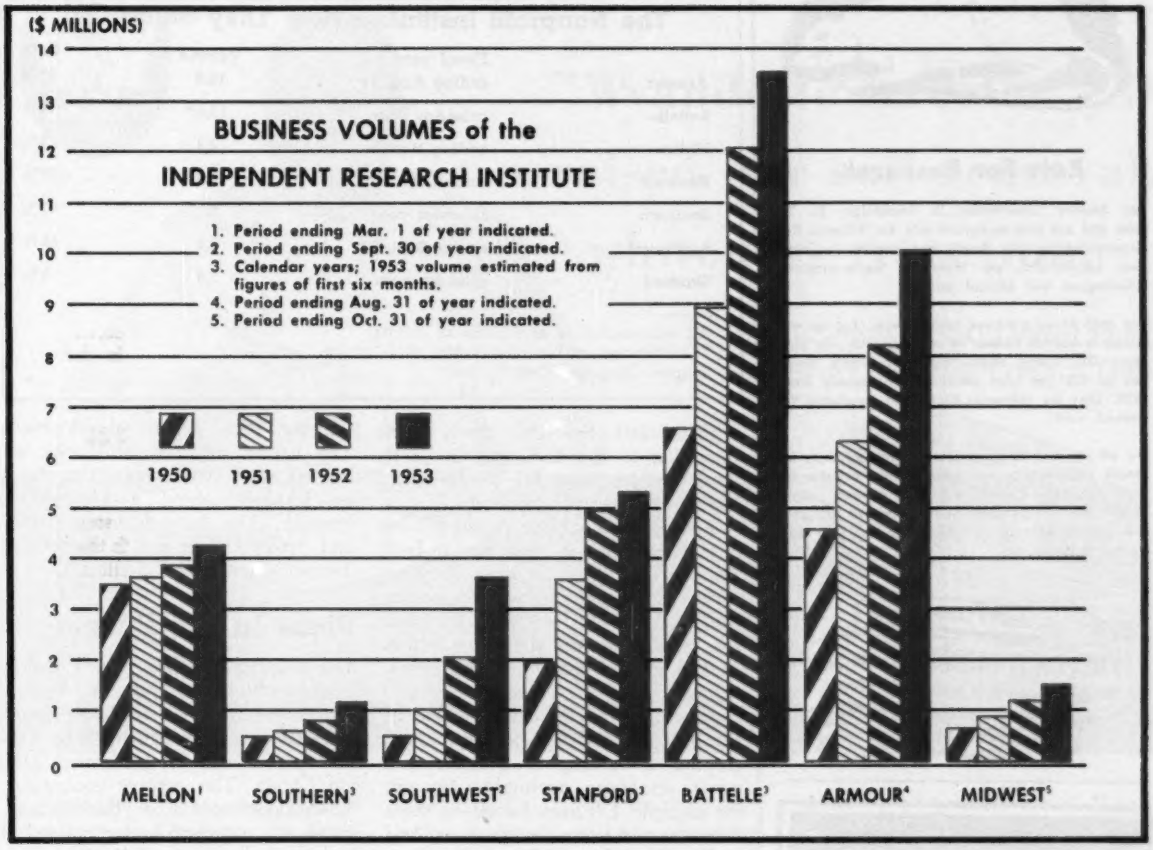
Containers are placed wherever material accumulates. When loaded each is picked-up, hauled and emptied (as illustrated above) . . . or load set down intact. The entire operation is handled by only one man, the driver, by hydraulic controls in cab.

The containers are built in capacities up to 12 cu. yds. and each is designed to suit the materials to be handled—be they bulky, light or heavy . . . solids, liquids or dust.

One Dempster-Dumpster, with driver, does the work of 3 to 5 conventional trucks . . . eliminates trucks and crews standing idle . . . eliminates rehandling of materials and increases efficiency and good plantkeeping.

If you have even any remote idea that this equipment could be adapted to your operation, by all means contact us because being without the Dempster-Dumpster System could easily be costing your company thousands of dollars annually. Manufactured and sold exclusively by Dempster Brothers, Inc.

DEMPSTER BROTHERS, 273 Dempster Bldg., Knoxville 17, Tenn.



Sponsored Research: Building on a Boom

Figures don't lie, though they may not always tell the whole truth. Even so, it doesn't take a statistician to read meaning into the business volume figures of the independent research institutes. They tell a tale of prosperity obvious to the most casual observer, document the continuing boom in sponsored research.

Boom seems to be the rule at the independent regional research centers. All have registered substantial revenue gains in each of the past few years. This year is no exception. Just in with the new fiscal returns, a CHEMICAL WEEK survey of the institutes shows uniform advances over the last annual period (*CW, Aug. 9, '52*), better than 20% in most cases (*see table*). For a profile of the trend, consult the bar chart.

Throughout, the data underscore one paramount fact: the institutes as a group have come of age. Not one is missing from the charmed circle of $1-million-a-year earners. And, taken together, they will account for approximately $38 million in the latest fiscal period, or better than 1% of the nation's total research outlay. Collectively, the institutes have doubled their business volume in less than four years.

What this mercurial climb has meant, in terms of growth and expansion during the past year, is clearly apparent. Southern Research Institute will have two new buildings, doubled laboratory space by the close of this year. Battelle Memorial Institute has increased its staff by 244 (total: 2,143), added 80,000 sq. ft. of working area since last summer; another 72,000 sq. ft. are nearing completion. Armour Research Foundation has boosted both staff and space by 10%. Midwest Research Institute will shortly break ground for new facilities in which to consolidate and expand activities now scattered through six separate buildings. Stanford Research Institute expects to have increased personnel by more than 20% by year's end.

New Paths: And so it goes. But physical expansion doesn't tell the whole story. Hand in hand with staff and space additions has come diversification, a broader scope of scientific activity. Most striking example is highlighted by construction of a five-story cancer research building just getting under way at Southern Research Institute. Southern has been in cancer research for several years, but completion of the new $300,000 laboratory building (to be affiliated with Sloan-Kettering Institute of New York) will mark a major amplification of that effort in an organization primarily devoted to industrial studies.

At Stanford, diversification shows up in the social science research unit established in the past year. Stanford social scientists are concerned with four areas of research—personnel, survey, human relationship, human engineering—and their application to industrial problems. The novel department was launched with the aid of more than 100 executives (representing 40 companies) at SRI's recent "Social Science for Industry" seminar.

Midwest's new computation center

The Nonprofit Institutes: How They Made Out

	Fiscal year	Volume	Gain
Armour	ending Aug. 31	10.0	23%
Battelle	calendar year	13.4*	12%
Mellon	ending Mar. 1	4.1	8%
Midwest	ending Oct. 31	1.4	27%
Southern	calendar year	1.1	57%
Southwest	ending Sept. 30	2.8	40%
Stanford	calendar year	5.3	5%

All volume figures in millions of dollars.
* Current rate of business, not a total for the year.
Source: Chemical Week Survey.

with its distinctive (only three are in operation in the U.S.) pipeline network analyzer also fits nicely under the "broader scope" heading.

Riding the Backlog: All in all, it's a cheering picture; but can it last? For the short term, at least, the consensus is a resounding yes. To a man, the heads of the nonprofit institutes see good times in the near future. And they aren't looking through rose-colored glasses. Defense contracts coupled with burgeoning industrial research demand has, in most cases, created a backlog of projects that won't disappear overnight. Armour, for example, has been forced—in some cases—to turn down new projects. And Mellon President Edward Weidlein tells CW: ". . . we have continuously operated at over-capacity with a waiting list of projects."

The long-term outlook is considerably less secure—an economic fact of life that hasn't eluded the realistic institute administrators. Armour, Stanford and Southwest—all with very sizable allotments of government work—are planning against the day the pinch in federal research spending will be felt. Director Jesse Hobson of Stanford hopes to put the brake on expansion, would like to level off the institute's total volume but hike the industry-sponsored proportion from the present 42 to 60%. Armour, too, has affirmed its intention of going after more industrial contracts.

Southwest has hitched its star to the general economic development of its home area, is concentrating on common denominator problems like petroleum exploration studies (underwritten by several oil companies). Other recently activated common denominator projects: carbon black handling; natural gas transmission; auto and diesel engine performance; water problems of the Southwest.

How well the institutes court industry will, in large measure, determine their future development. The happy days of prosperity unlimited can't last forever. But they'll be leaving behind a heritage of strength. The boom-fostered growth and diversification are in themselves insurance against a bust.

Piece in the Puzzle

The chemical jig-saw puzzle that is photosynthesis is one step nearer completion this week with the piecing-in of an elusive intermediate by University of California researcher Melvin Calvin. The captive compound: 6,8-dithiooctanoic acid (thioctic acid, for short), a growth factor isolated at Lederle Laboratories Div., American Cyanamid Co. (Pearl River, N.Y.)

Liver was the lure for the discovery of this new clue to the fundamental mysteries of food production. Lederle researchers had long been intrigued by a growth-promoting material, tagged "protogen," present in liver and a number of other natural materials. But efforts to purify and characterize the liver component were stymied by its scarcity and multiplicity of chemical forms.

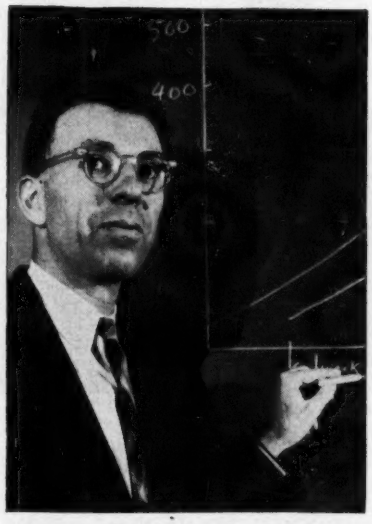
By astute chemical manipulation, however, a fragment was split off protogen, pegged as thioctic acid. Yet, for all practical purposes, significance of the development was effectively dimmed by the infinitesmal yield of the sulfur-containing acid. Lederle's Thomas Jukes, chief of nutrition and physiology research, reports that only about 50 mgs. were obtained from 100 tons of liver.

Glaring Need: Obviously, a less tenuous source of supply would be a prerequisite to any program of research with the new material. The glaring need was filled last year by the synthesis of the scarce acid by Lederle's Bullock, Brockman, Patterson and Stokstad. So great was the activity of the synthetic material that

it was possible to detect one part in 10 billion parts of solution by bacterial growth response.

But thioctic acid's spectacular growth-boosting ability gave no hint of an extra-curricular attribute. Contemplating the structure of the new acid, however, California chemist Calvin saw in thioctic's five-membered ring (three carbons and a disulfide) a possible explanation of the puzzling mechanism of energy transfer in photosynthesis.

Calvin's theory: in sunlight, the energy of activated chlorophyll splits



LEDERLE'S JUKES: From insignificant amounts, a significant clue.

the ring between sulfur atoms, which are then free to combine with hydrogen, speed the conversion of water and carbon dioxide to carbohydrate and oxygen. In effect, the acid acts as a middleman, transfers hydrogen from one enzyme system to another. In darkness, thioctic assumes a different role, facilitates green plant production of citric and glutamic acids.

Put to the test, Calvin's hypotheses apparently are proving their mettle. The California scientist and co-researchers have just shown that a type of alga, a single-celled marine plant, can carry out light-induced chemical reactions more rapidly in the presence of added thioctic acid. He now speculates that a thioctic-containing compound may have been the original photosynthesis catalyst during the early stages of the evolution of plant life, that chlorophyll was later evolved as a kind of booster.

Primarily of fundamental significance, Calvin's work comes at a time when intensive efforts are being made (*see p. 80*) to tap the energy of photosynthesis. With researchers in several

tracers...to opportunities in the chemical process industries

MANAGEMENT SERVICES

EVANS

Chemical Research—Processes—Products
Development Problems
Complete Laboratory—Pilot Plant
Mechanical & Optical Sections
Ask for new Scope Sheet C
listing over 100 of our activities
EVANS RESEARCH & DEVELOPMENT CORP.
250 East 43rd St., N. Y. 17, N. Y.

JAMES P. O'DONNELL

Engineers

CHEMICAL PROCESS PLANTS
Design—Procurement—Construction Supervision
39 Broadway, New York 6

SIRRINE

ENGINEERS
Plant Design & Surveys covering Chemical Electrochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment; Analyses & Reports
Greenville **South Carolina**

Wisconsin Alumni Research Foundation

LABORATORY SERVICES
Project research and consultation in Biochemistry, Chemistry, Bacteriology and Entomology
Occasional or periodic testing services
Write for price schedule
P.O. Box 2059 • Madison 1, Wisconsin

EMPLOYMENT

Positions Vacant

Technical Sales and Service—Opportunity for man with process industry training or experience and formal training in microbiology for sales and technical service work in the field of industrial microorganism control. Training period; salary plus commission. All replies confidential. Write fully P-8359, Chemical Week.

WANTED

ADMINISTRATIVE ASSISTANT
TO SALES MANAGER
of large manufacturer of Industrial Chemicals. Age about 35. Must have sales experience, preferably in industrial chemical field. All replies confidential. Please give full data in your reply to
P 8554 Chemical Week
330 W. 42 St., New York 36, N. Y.

Selling Opportunities Offered

Sales Representative Wanted — Liquid Type Phenolic and Urea resins. (Solid Phenolics also available but temporarily have full schedule.) Will make commission or other suitable arrangement. RW-8477, Chemical Week.

WANTED

ALERT CHEMICAL DISTRIBUTOR
Well known Midwest manufacturer of synthetic detergents desires representation on Eastern Seaboard. Distributor with technically trained men and experience in this field required.
RW 8508 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

Position Wanted

Chemical Engineer, Eighteen Years Production and engineering experience in heavy chemical manufacturing, seeks position as chief engineer or plant manager in small or medium-sized concern. PW-8574, Chemical Week.

PUBLICATIONS

For Sale or Wanted

Journals, Periodicals. Chemical, technical, scientific. Sets & back files bought & sold. Large stock. Catalogs issued. Canner's Inc., Dept. CW, Boston 19, Mass.

SPECIAL SERVICES

Processes

CUSTOM SPRAY DRYING

Complete facilities for limited or volume spray drying. We offer over 20 years experience.
SPRAY DRYING SERVICE, INC.
501 North Avenue, Garwood, New Jersey
Phone: Westfield, N. J. 2-1829

Truland Chemical & Engineering Co., Inc.

AVAILABLE CUSTOM REFINING FACILITIES
Distillation, Extractions
Separations, Fractionations
Drum Lots - Tank Cars
WANTED All Types of Crude Mixtures
By-Products, Residues, Wastes
Contaminated Solvents
Box 426, Union, N. J. **UNionville 2-7360**

BUSINESS OPPORTUNITIES

The owner of a small plant manufacturing laboratory specialties, located in New Jersey, is offering a share in the business to a capable industrious person who is able to invest about fifteen or twenty thousand dollars. This is a very small but rapidly growing business and has tremendous possibilities for expansion. The owner of this plant is a chemist with many years of experience in research and development work. Address your inquiries to BO-8572, Chemical Week.

EQUIPMENT—used-surplus

For Sale

FOR SALE

Harper Tunnel Kiln

Model VM 912180—CCK 48, continuous car type, 48 feet long tunnel, overall length of 65 feet with two resistor chambers, 15 feet in length. Complete with transformer, recording controllers and Globar elements. Purchased in 1951 and used briefly.

M. Sherman
Carboloy Department of
General Electric Co.
P. O. Box 237, Roosevelt Park Annex
Detroit 32, Michigan

Abbe Ball & Pebble Mills, all sizes, First Mach. Corp., 157 Hudson St., N.Y. 13.

Centrifugals, 40" Bird Con. First Mach. Corp., 157 Hudson St., N.Y. 13.

Distillery Equipment for sale. Excellent condition. Copper & Stainless Tanks, Copper Stills & Condensers, Pressure Cooker, Emulsifier, Grain Mills, etc. For details, contact Southwest Metal Co., P.O. Box 215, Glassport, Penna.

Dryer, Double Drum, Buflovak, 24" x 36". Perry Equipment, 1415 N. 6th, Phila. 22, Pa.

Dryer, Rotary, 4'x30'x⅜" welded. Heat & Power Co., Inc., 70 Pine St., N.Y. 5. Hanover 2-4890.

Filter — 8'x10' Oliver steel drum, wood deck, Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Filters: Shrivers, Sperry, Sweetland, etc. Perry Equipment, 1415 N. 6th, Phila. 22, Pa.

Kombinator-Marco Co. Flowmaster K200, 7½ HP Drive, Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Mixers: W. & P. to 300 gal. Jktd. First Mach. Corp., 157 Hudson St., N.Y. 13.

Pebble Mill, Abbe 32" x 36", porcelain lined: Perry Equip., 1415 N. 6th, Phila. 22, Pa.

Reactors Stainless to 500 gal. First Mach. Corp., 157 Hudson St., N.Y. 13.

For Sale

Sweetland #5 SS Filter. Equipment Clearing House, Inc., 289 10th St., Bklyn, N.Y.

Tanks, S/S—16,000 gal. to 2½ gal. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Tanks, Steel, 15,000 gal. 970' of 3" coil, 40 HP vert., agitator, Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Tanks, Aluminum, 330 gal., 150#pr. Perry Equip. Corp., 1415 N. 6th, Phila. 22, Pa.

Tanks—S.S. 12,750 gal., 11,800 gal. Chemical & Process Mchy. Co., 146 Grand St., N.Y. 13, N.Y.

Wanted

WANTED

MACHINERY OR PLANT INCLUDING

Vacuum Dryers	Columns
Filter Presses	Pulverizers
Heavy Duty Mixers	Packaging and Wrapping Equipment
Rotary Filters	S/S and non-corrosive
Reaction Kettles	Storage Tankage

P. O. Box 1351, Church St. Sta., N. Y. 8, N. Y.

Wanted at Once

Chemical Equipment for Defense Plant Work

Autoclaves	Kettles
Centrifuges	Mixers
Dryers	Pressers
Filters	Pulverizers
	Tanks

Interested in complete plants—either now operating or idle. Give full particulars when writing
W 3117 Chemical Week
330 W. 42nd St., N.Y. 36, N.Y.

DEALERS in used-surplus

Consolidated Products Co., Inc.

Buy from a Long Established Firm
AAA-1 Rated — Our 36th Year
18 Park Row, New York 38, N.Y.
BArclay 7-0600
Shops: 331 Doremus Ave., Newark 5, N.J.

Your First Source

NEW YORK'S
LARGEST STOCK
RENTAL-PURCHASE PLAN
FIRST MACHINERY CORP
157 Hudson St., N. Y. 13
Phone WORTH 4-5900

R. Gelb & Sons, Inc.

Largest stock of used chemical equipment in the United States
68 Years of Leadership
R. Gelb & Sons, Inc.
Union, N. J.
UNionville 2-4900

CHEMICALS WANTED

BUYERS OF SURPLUS

CHEMICALS — OILS — SOLVENTS
DRUGS — RESINS — WAXES
PLASTICS — COLOR — ETC.
BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street **New York 13, N. Y.**
Worth 4-5120

Chemical Service Corporation

READY TO BUY
Chemicals, Plasticizers, Solvents
Drugs, Pharmaceuticals, Oils
Pigments, Colors, Waxes, etc.
CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 5, N. Y.
HAnover 2-6970

quarters eyeing algae and their kin as foods of the future, dithioctic acid's primitive heritage is hardly a modern handicap.

•

Mass Debut: Seven radioactive L-amino acids have just joined the ranks of commercially available tracer materials. They are: arginine; histidine; lysine; phenylalanine; tyrosine; aspartic and glutamic acids. Labeled with carbon-14, the acids—according to Schwarz Laboratories, Inc. (New York)—can be furnished in any desired quantities. Consumers: biochemical research laboratories.

•

Purity Plus: Petroleum chemists and organic researchers, in general, have three new API standard samples at their disposal. The newcomers: 2,3-dimethyl-1-pentene; vinylcyclohexane; 1,4-diisopropylbenzene. All may be had from Carnegie Institute of Technology's Petroleum Research Laboratory (Pittsburgh, Pa.).

•

All for Titanium: Mallory-Sharon Titanium Corp. has just commissioned its new Niles, O., metallurgical research laboratory. Devoted exclusively to titanium, the new lab is set up for fundamental chemical and metallurgical studies, has access to rolling and fabricating facilities at nearby Niles Rolling Mill (division of Sharon Steel Corp.).

To mark the opening of its new research wing, Mallory-Sharon unveiled an equally new smelting process for the manufacture of titanium ingots. Tagged method "S," the technique is reputed to combine the best features of arc and induction melting, yield a homogeneous ingot of carefully controlled carbon content. Key: use of a titanium (instead of carbon) electrode, a copper crucible.

•

Stearic Prep: A new synthesis of 10-hydroxystearic acid could be good news to manufacturers of greases, plasticizers, lubricants and coatings. Developed by chemists of U.S. Dept. of Agriculture's Southern Regional Research Laboratory (New Orleans, La.), the method is highly specific, hinges on the catalytic hydrogenation of cis- and trans- epoxy stearic acids in the presence of palladium and glacial acetic acid. The 10-hydroxy compound is formed almost to the complete exclusion of the 9-isomer.

• Vinyl ethers are the focus of another new development in synthetic chemistry. By a new, low-temperature method, developed in the laboratories of the Du Pont Co., vinyl acetate reacts with primary hydroxy compounds (in the presence of mercuric salts) to yield vinyl ethers and acetic acid.

•

Labeled for Research: Thanks to a four-way cooperative effort, radioactive cortisone and hydrocortisone will shortly be making their contribution to arthritis research. Using a synthesis developed at Sloan-Kettering Institute for Cancer Research (New York), Charles E. Frosst and Co. (Montreal)—aided by Upjohn Co. (Kalamazoo)—prepared the "hot" cortisone. Labeled hydrocortisone was biosynthesized by Worcester Foundation for Experimental Biology (Shrewsbury, Mass.) with an assist from Frosst.

Successful completion of the combined approach marks the first time the two cortical hormones have been tagged with carbon-14. Limited quantities of the tracer compounds are being distributed by National Institutes of Health (Bethesda, Md.).

•

Double Bid: Bidding for jobs this week are two new chemicals:

• Lactide (3,6-dimethyl-2,5-p-dioxanedione) is the offering of Clinton Foods, Inc. (Clinton, Ia.). It's in pilot production, has a potential market in chemical synthesis. Interesting feature: the compound hydrolyzes to lactic acid in cold water.

• Diethylethoxymethylene malonate rounds out the duo. Available in commercial quantities from Kay-Fries Chemicals, Inc. (New York), the compound has possibilities in the synthesis of antimalarials, other quinoline and pyrimidine ring structures.

•

Face Lifting: Victims of congestive heart disease may find a measure of glad tidings in the news of Lederle Laboratories Div.'s (American Cyanamid Co.) newest sulfonamide. Spurred by the toxicity of mercurial compounds used in cardiac therapy, Lederle researchers scouted around for more innocuous drugs. Their choice: the sulfonamides. Chemically, the new agent is 2-acetylamino-1,3,4-thiadiazole-5-sulfonamide, a remodelled sulfanilamide. Its trade-tag: Diamox.

•

Record: Radiation Counter Laboratories, Inc. (Skokie, Ill.) lays claim to the honor of producing the longest neutron counters in the world. The giants' vital statistics: six ft. long; filled with enriched boron trifluoride

Big Jobs for Miniature Stills

IN THE SHADOW of giant refinery fractionating towers, distillation researcher Leah Rabinovitz checks battery of eight new miniature stills at Standard Oil Co.'s (Indiana) Whiting laboratories. Designed for exacting results, the new laboratory fractionators may require more than 120 hours to process a scant five ounces of liquid. The little stills have their work cut out in developing refinery design data, furthering petroleum and petrochemical product studies. They have already contributed design data for Standard of Indiana's still-incomplete refinery at Mandan, N.D.

CHEMICAL WEEK • ADVERTISING INDEX

JULY 25, 1953

tracers SECTION
(Classified Advertising)
H. E. Hilty, Mgr.

ADVERTISING STAFF

ADVERTISING SALES MGR. ..B. E. Sawyer
BUSINESS MGR. .....A. J. Mangold

Atlanta 3 .....Robert H. Sidur, 1321 Rhodes-Haverty Bldg., Walnut 5775-2383

Chicago 11.....Alfred D. Becker, Jr., Steven J. Shaw, 520 N. Michigan Ave., Mohawk 4-5800

Cleveland 15 .....Vaughan K. Dissette, 1510 Hanna Bldg., Superior 7000

Dallas 1 .....James Cash, First National Bank Bldg., Prospect 7-5064

Los Angeles 17 .....Jos. H. Allen, 1111 Wilshire Blvd., Madison 6-4323

New York 36 .....Knox Armstrong, Robert S. Muller, L. Charles Todaro, 330 West 42 St., LOngacre 4-3000

Philadelphia 3 ...William B. Hannum, Jr., Charles F. Onasch, Architects Bldg., 17th & Sansom Sts., RIttenhouse 6-0670

San Francisco 4.....Ralph E. Dorland, 68 Post St., Douglas 2-4600

Boston 16.....350 Park Square Building, Hubbard 2-7160

Detroit 26.....856 Penobscot Bldg., Woodward 2-1793

Pittsburgh 22.....738 Oliver Bldg., Atlantic 1-4707

St. Louis 8 .....3615 Olive St., Continental Bldg., Lucas 4567

RESEARCH . . . . . .

gas; of all-aluminum construction.

•

Looking Ahead: A new engineering research laboratory is in the cards for Monsanto Chemical Co.'s Nitro, W. Va., plant. The second research addition at Nitro in as many years, the new four-story (60 x 85 ft.) unit will accommodate 15 engineering researchers, house synthetic detergent, oil additive, rubber and agricultural chemical studies.

•

Tied to Size: More effective application of insecticide sprays is the goal of studies at University of California's College of Agriculture dealing with the relation between spray drop size and insecticidal efficiency. "Results to date," report the scientists, "indicate that the large needle-type crystals are more toxic by one-half than the fine, colloidal type of crystals . . . that droplet size is a variable, closely tied up with crystal size." Coming up: work aimed at the discovery of most effective sizes for different insects.

•

More on Algae: The Carnegie Institution of Washington monograph on algae culture (*CW Newsletter, July 18*) will be available only from Carnegie (1530 P St., N.W., Washington 5, D.C.). There will be a charge for copies of the report—referred to as Publication No. 600—but the amount has not as yet been set.

The 350-page volume, written by two-score researchers working under Carnegie's direction, is intended to set down experience accumulated to date on algae culture as a cheap source of food and industrial raw materials. The institution's director, Vannevar Bush, says the publication is aimed at helping organizations interested in setting up pilot plants for the culture of one-celled microorganisms.

Carnegie has been the major source of financing for research on the subject during the past few years at a number of institutions including Research Corp. of New York, Stanford Research Institute, American Research & Development Corp. and Arthur D. Little. Its interest in algae is part of its broad program of research on photosynthesis.

Dr. Bush reports that Carnegie has obtained an assignment of a number of patent applications from their work so that if development reaches the stage where one of these patented processes is needed, it may be available as broadly as is "consistent with the optimum public benefit and on a reasonable basis."

No More Trouble with Chattering Teeth!

Many automobile manufacturers, faced with a timing gear noise problem, have solved this by machining gears from a laminated plastic stock. Plastic gears work and wear in highly satisfactory fashion...and contribute to the silent operation which makes today's motorists so proud of the cars they're driving.

Thanks to other laminated plastics incorporating Reichhold varnishes, scores of industries have developed parts which have vastly improved product performance.

Reichhold also supplies synthetic resins to the makers of paints, printing inks, paper, plywood, insulation, textiles and castings...further evidence that chemistry serves all industry, helps industry serve the world.

REICHHOLD CHEMICALS, INC.
630 Fifth Avenue, New York 20, N. Y.

Creative Chemistry . . . Your Partner in Progress

REICHHOLD

Uses of RCI Products

CANVAS, PAPER AND GLASS CLOTH LAMINATES: PLYOPHEN cresol, phenolic and resorcinol-formaldehyde resins and varnishes; RCI polyester resins.

CARBON PAPER: RCI inorganic chemical pigment colors.

CASTINGS: FOUNDREZ powdered phenolic resins (for the shell molding process); FOUNDREZ liquid phenolic resins and FOUNDREZ core oils (for core binders).

FURNITURE, PLYWOOD, FLOORING, HARDBOARD AND CHIPBOARD: HYDROPHEN phenolic glues; PLYACIEN protein glues; PLYAMINE urea-formaldehyde glues; PLYOPHEN phenolic and resorcinol-formaldehyde glues.

LEATHER: BECKOSOL alkyd resins (for leather finishes); PLYOPHEN resorcinol-formaldehyde resins, SUPER-BECKACITE pure phenolic resins, SYNTHE-COPAL ester gums (for leather adhesives).

LINOLEUM: BECKOSOL alkyd resins and PENTACITE pentaerythritol resins (for linoleum coatings); RCI inorganic chemical pigment colors.

PAINTS, VARNISHES AND LACQUERS: BECKACITE (1) fumaric, (2) maleic and (3) modified phenolic resins; BECKAMINE urea-formaldehyde resins; BECKOLIN synthetic oils; BECKOPOL modified phenolic resins; BECKOSOL (1) phenolated, (2) phthalic-free, (3) rosin modified, (4) pure drying and (5) pure non-drying alkyd resins; KOPOL processed Congo copals; PENTACITE pentaerythritol resins; STYRESOL styrenated alkyd resins; SUPER-BECKACITE pure phenolic resins; SYNTHE-COPAL ester gums; WALLKYD pure drying alkyd resins (for alkyd flat wall vehicles); WALLPOL vinyl-type copolymer latex emulsions (for latex flat wall coatings); RCI inorganic chemical pigment colors.

PAPER: BECKAMINE urea-formaldehyde resins (for adding wet strength, improving the wet rub of starch-clay coatings, and waterproofing starch adhesives); RCI inorganic chemical pigment colors (for paper coloring); STYRESOL styrenated alkyd resins (for paper coating).

PRINTING INKS: BECKACITE fumaric, maleic and modified phenolic resins; BECKOLIN synthetic oils; BECKOPOL modified phenolic resins; RCI inorganic chemical pigment colors.

TYPEWRITER RIBBONS: RCI inorganic chemical pigment colors.

WAXES AND POLISHES: BECKACITE modified maleic resins; SUPER-BECKACITE pure phenolic resins; SYNTHE-COPAL ester gums.

RCI

LUBRICANTS

Just stir these lubricants into water and they're ready to apply. When their work is done, remove them with a water rinse. No emulsifying or coupling agents are necessary to get them into solution and no costly alkalies or detergents are needed to remove them.

As rubber mold lubricants they give quick, clean release from the mold and impart an attractive finish to the rubber. And they burn out almost completely during the fabricating cycle without excessive carbon build-up.

In textile processing sizes, their lubricating and softening action gives the size pliability and lubricity. As a finishing size CARBOWAX compounds impart a soft "hand" to cotton and viscose and acetate rayon.

OINTMENT BASES

Besides their lubricating action and water-solubility, CARBOWAX compounds have the advantage of being white in color, bland and non-irritating to the skin, and solvents for many medicaments. These properties have made them popular as ointment bases for drugs and cosmetics. Their water-solubility insures effective action by the medicaments and complete coverage of tissue areas, as well as easy removal.

In cosmetic creams and lotions, CARBOWAX compounds impart skin-smoothing properties without a moist or tacky feeling and can be removed easily between applications.

The term "Carbowax" is a registered trade-mark of Union Carbide and Carbon Corporation.

Other uses of these unusual products include: metal extrusion operations, lubricants and humectants in steam-set inks, water-soluble bases for decalcomanias, plasticizers in adhesives, solvents in fire-fighting foams, binders for ceramic colors, additives in tin-plating solutions, and intermediates for the preparation of non-ionic surface-active agents and resins.

CARBOWAX *compounds are available for immediate shipment in commercial quantities. For samples and further information call or write the nearest of CARBIDE's 21 offices.*